

VOL. XLIV. No. 6

JUNE 1959

MECCANO

MAGAZINE



DR JOHN ALCOCK
AND
DR ARTHUR WHITTEN BROWN
1891-1919
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OCEAN ON JUNE 15, 1919
IN A BIRCH, WATLINGLAND - CROOK, IRELAND
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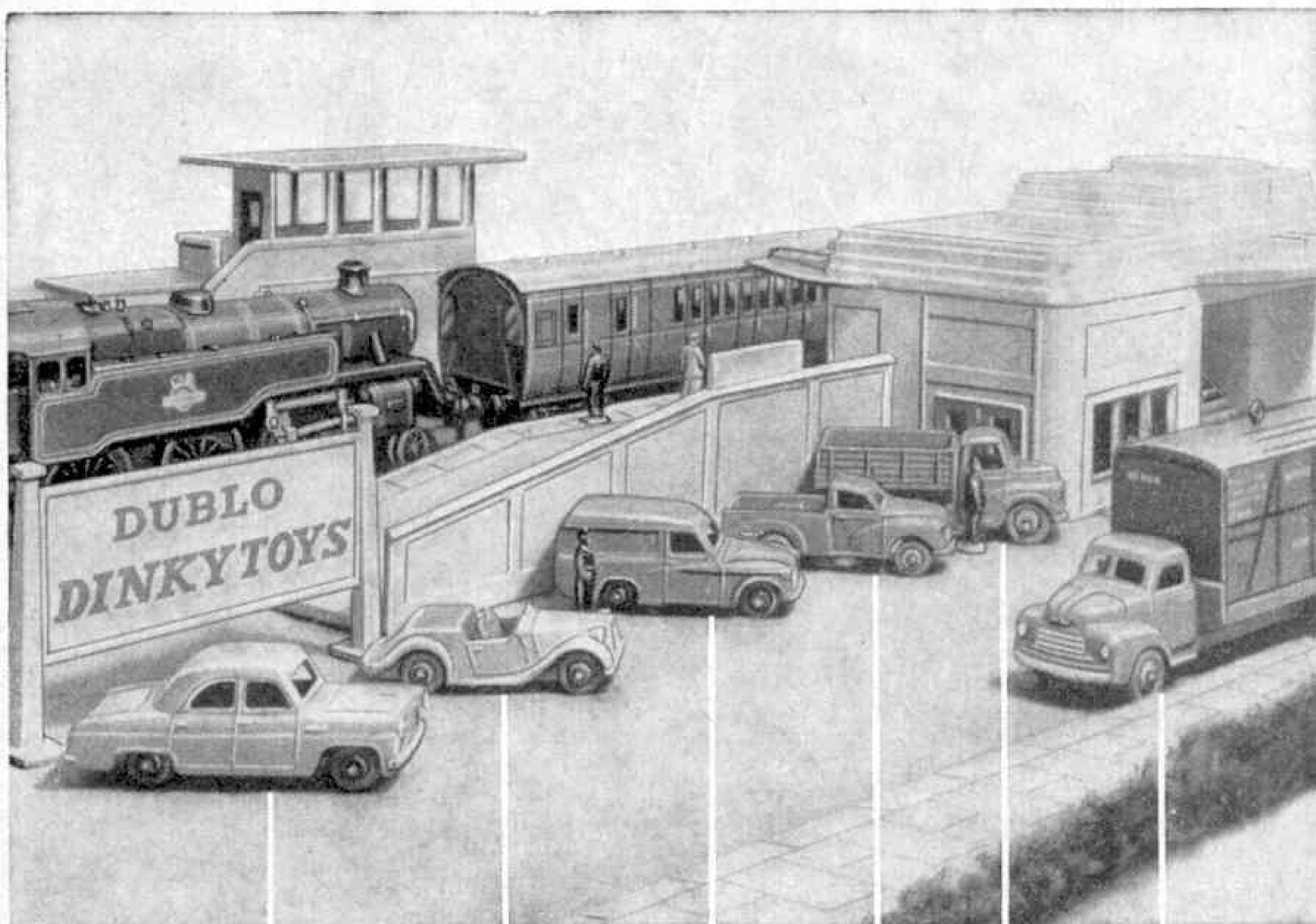
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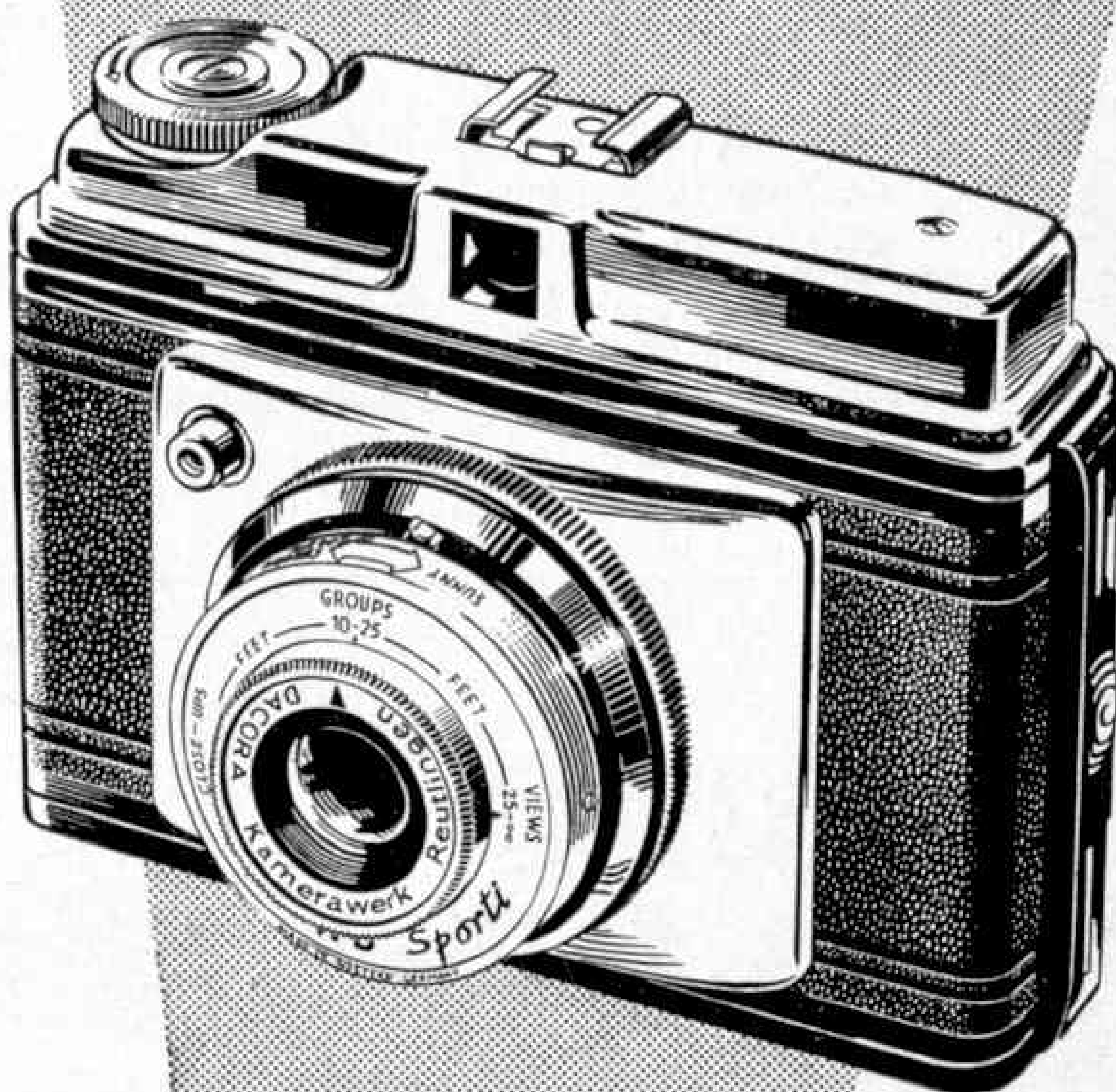
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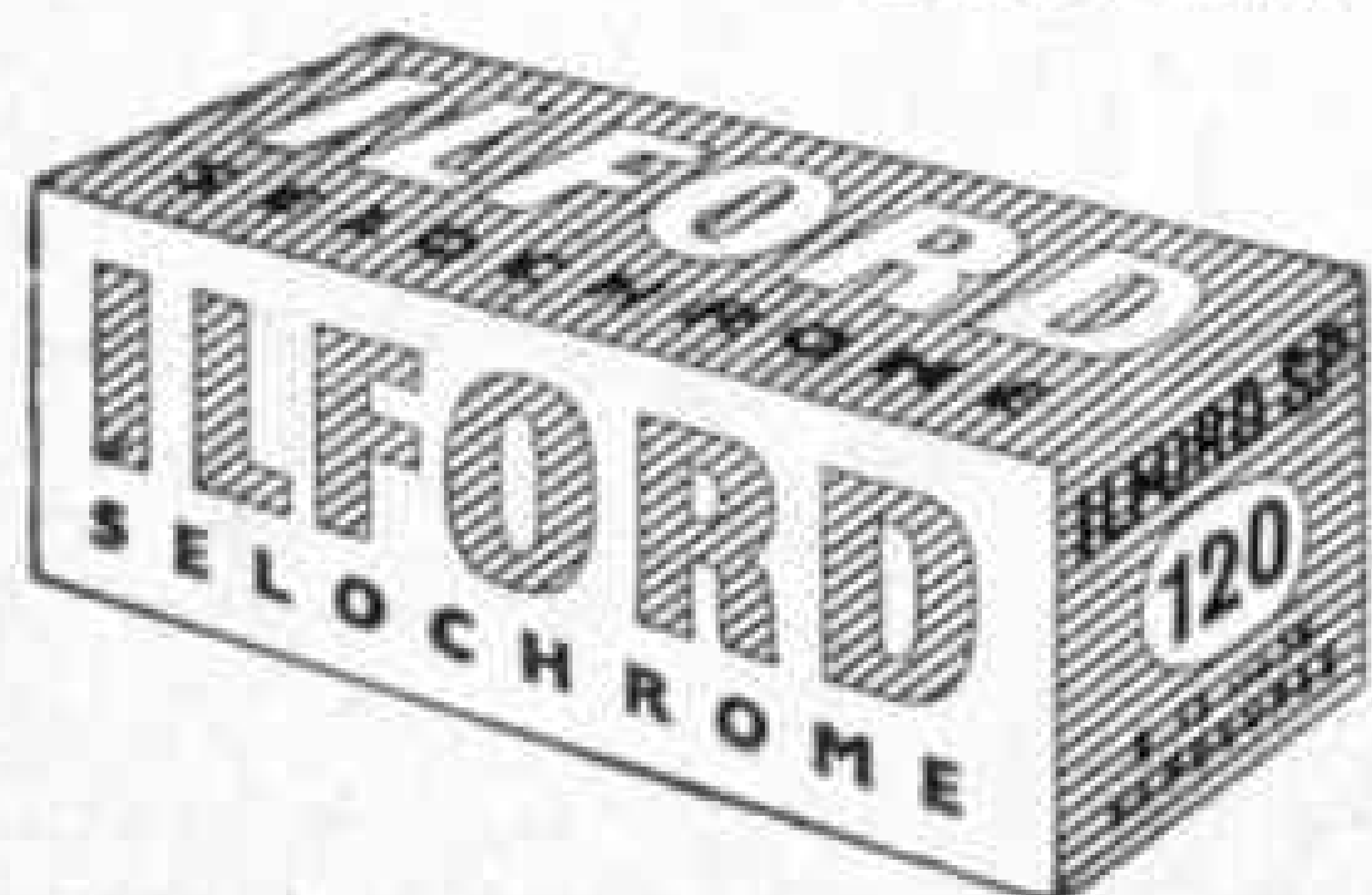
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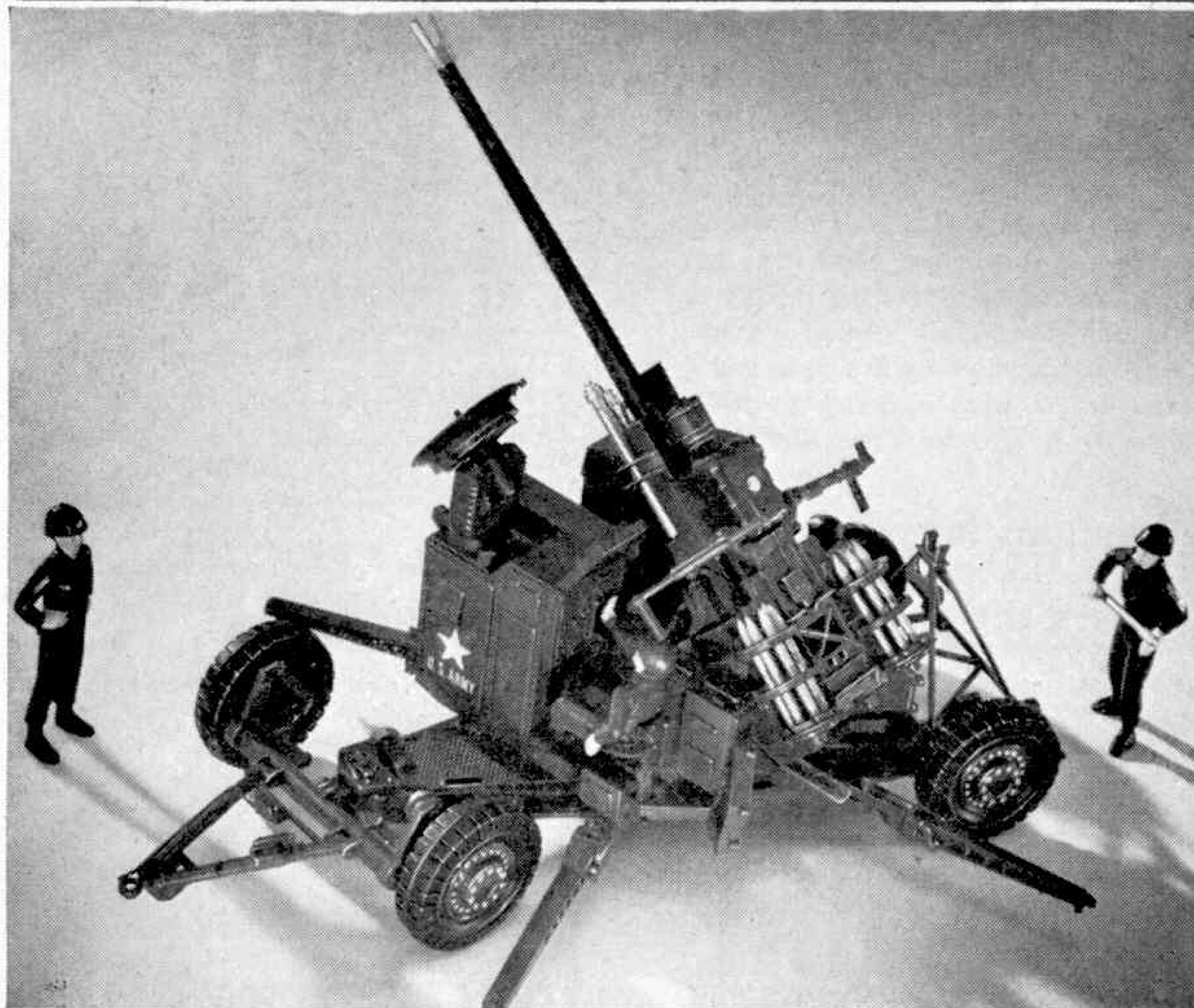
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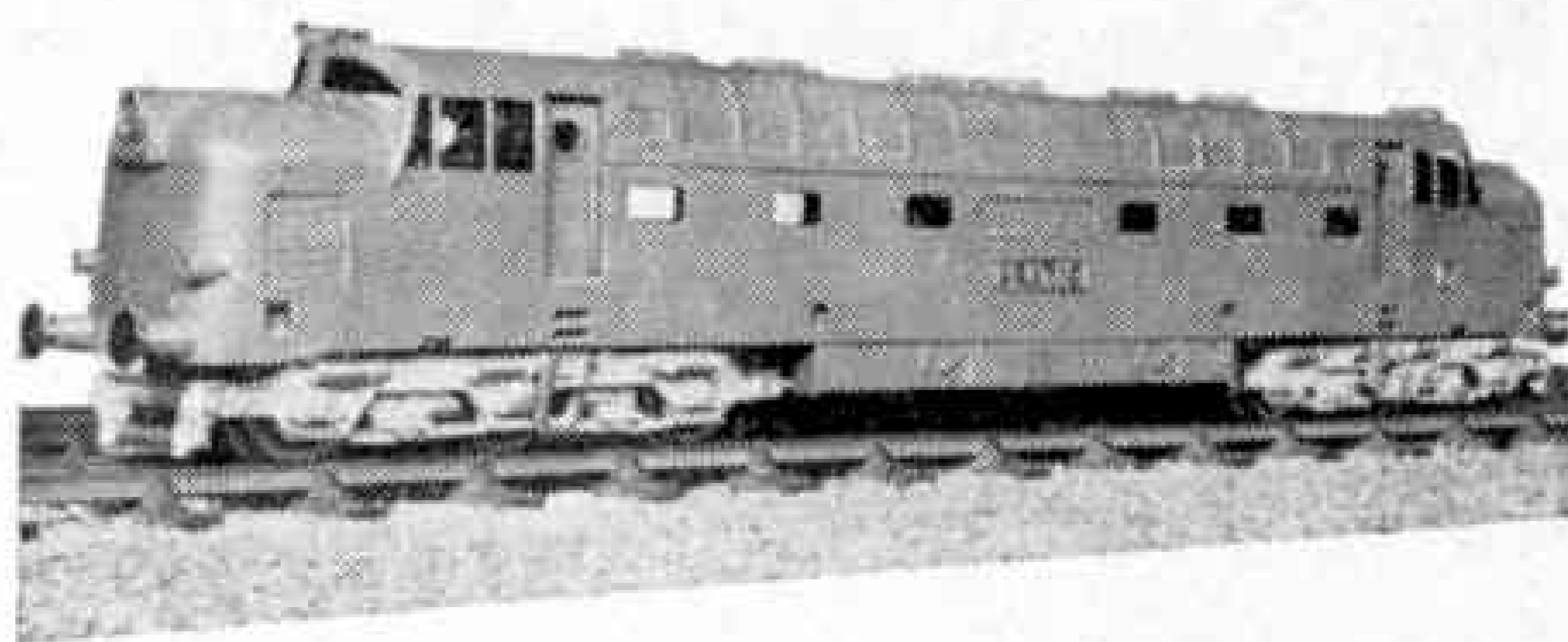
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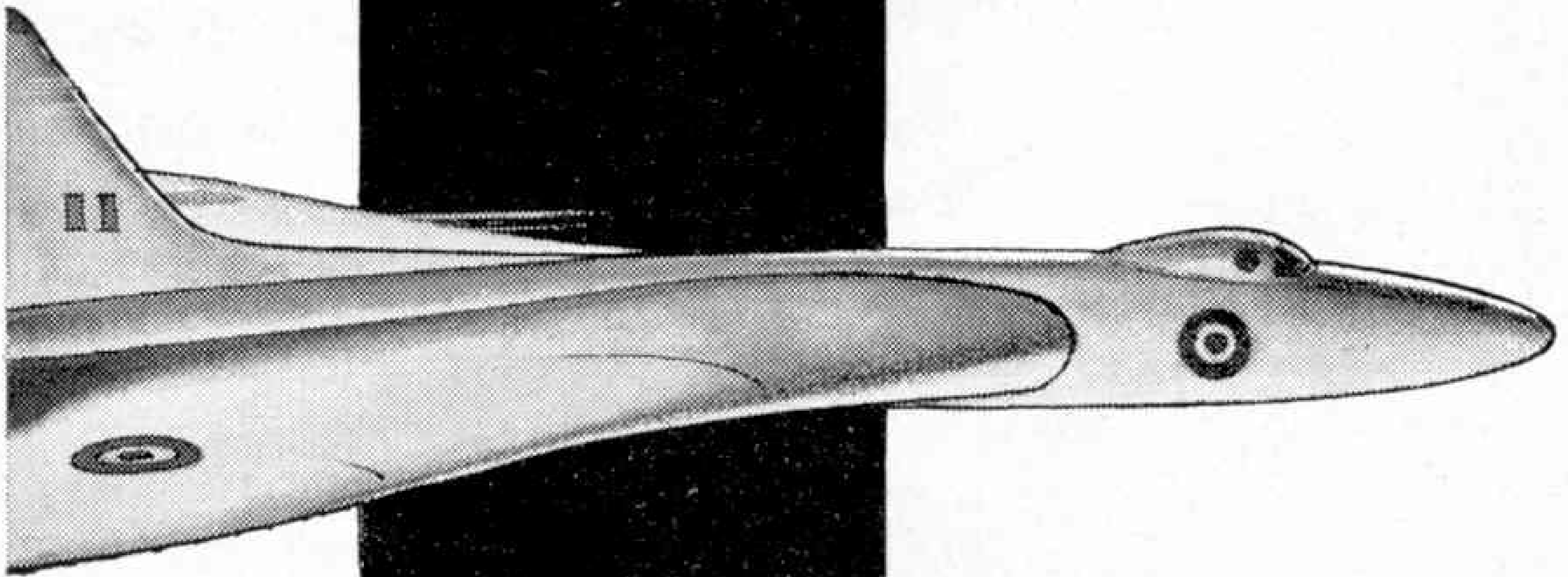


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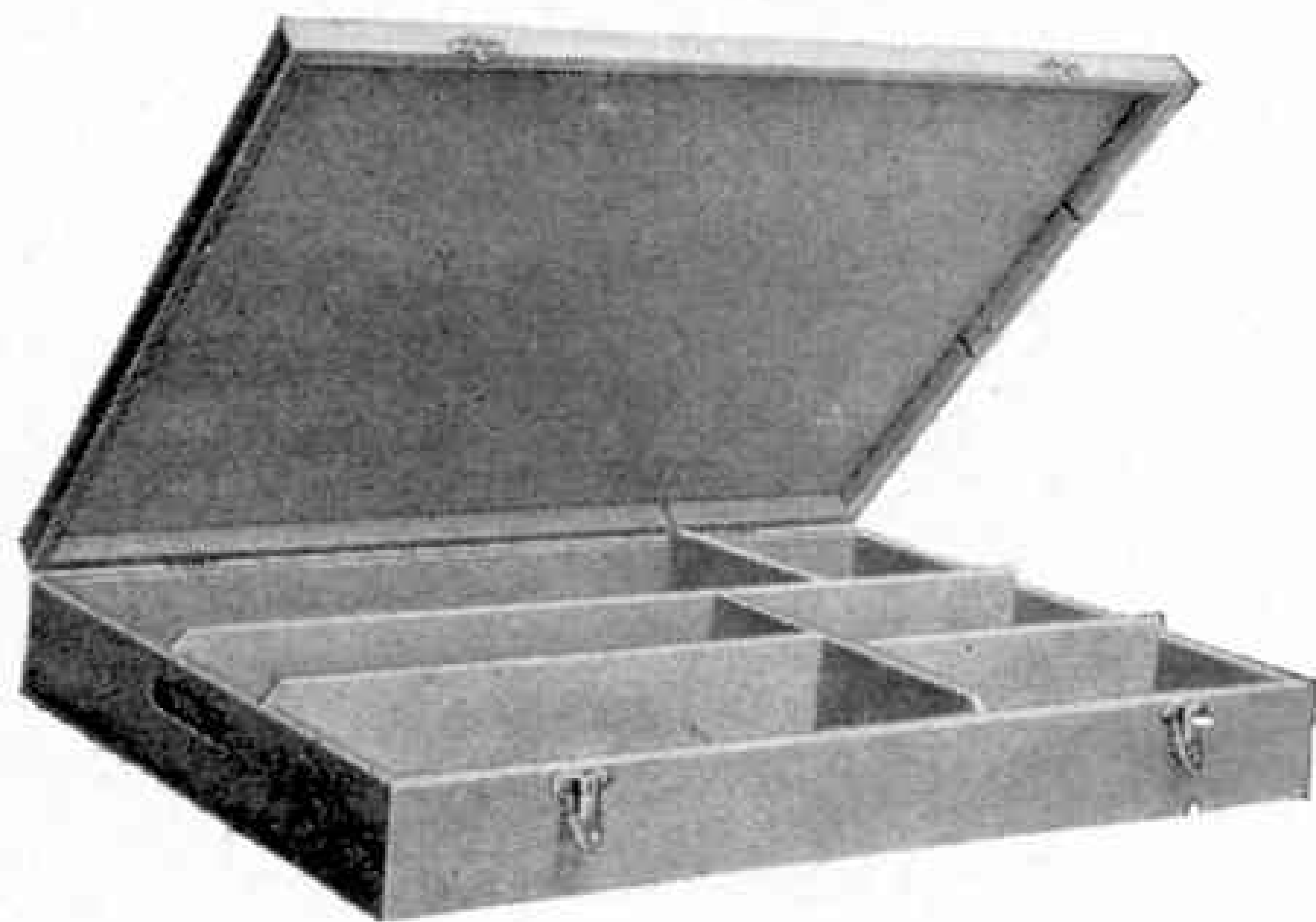
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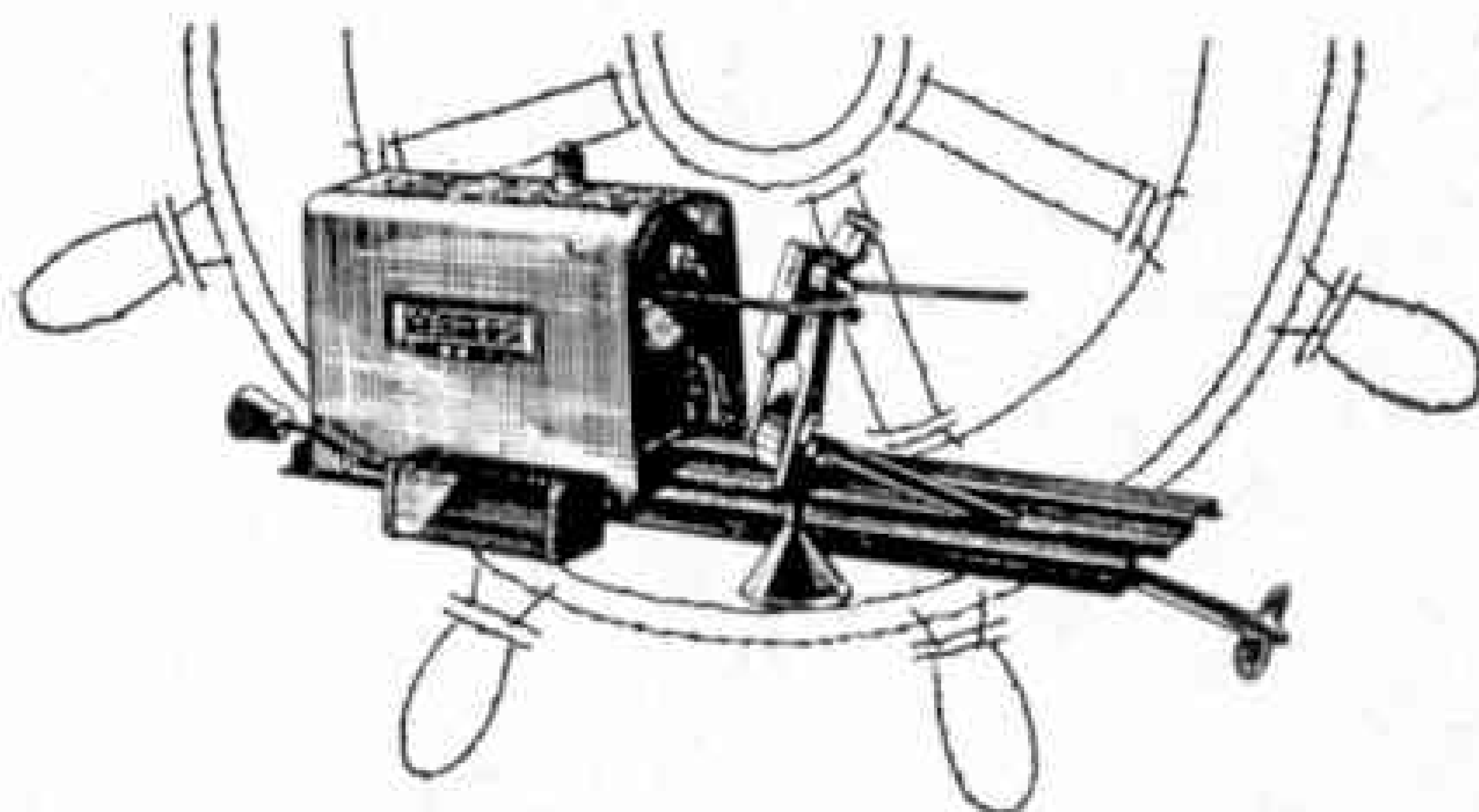


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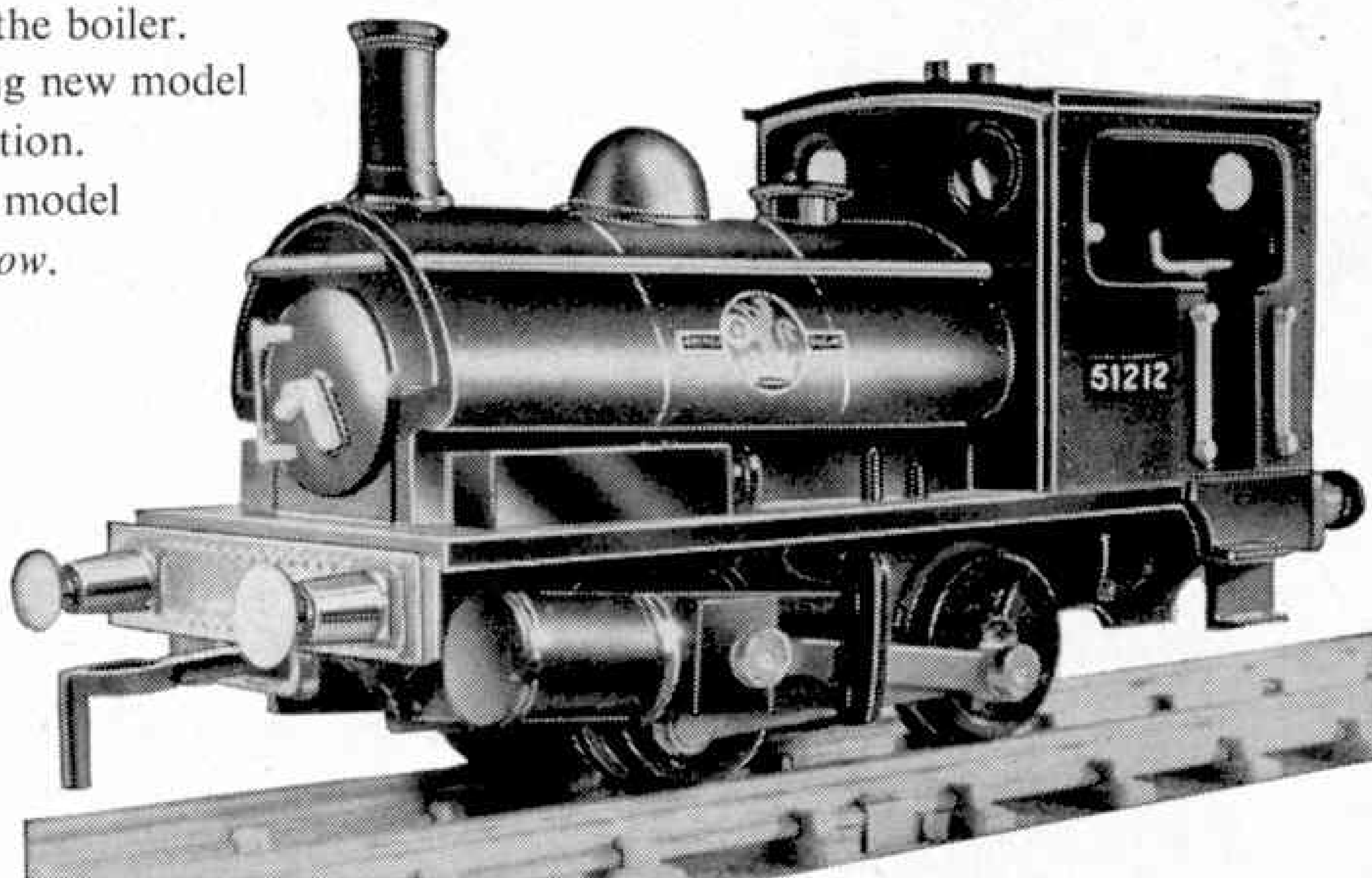
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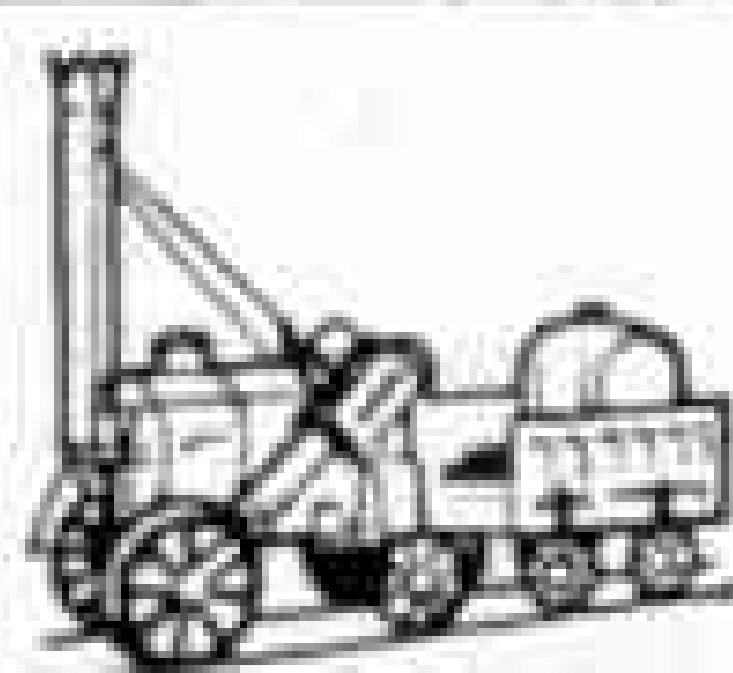
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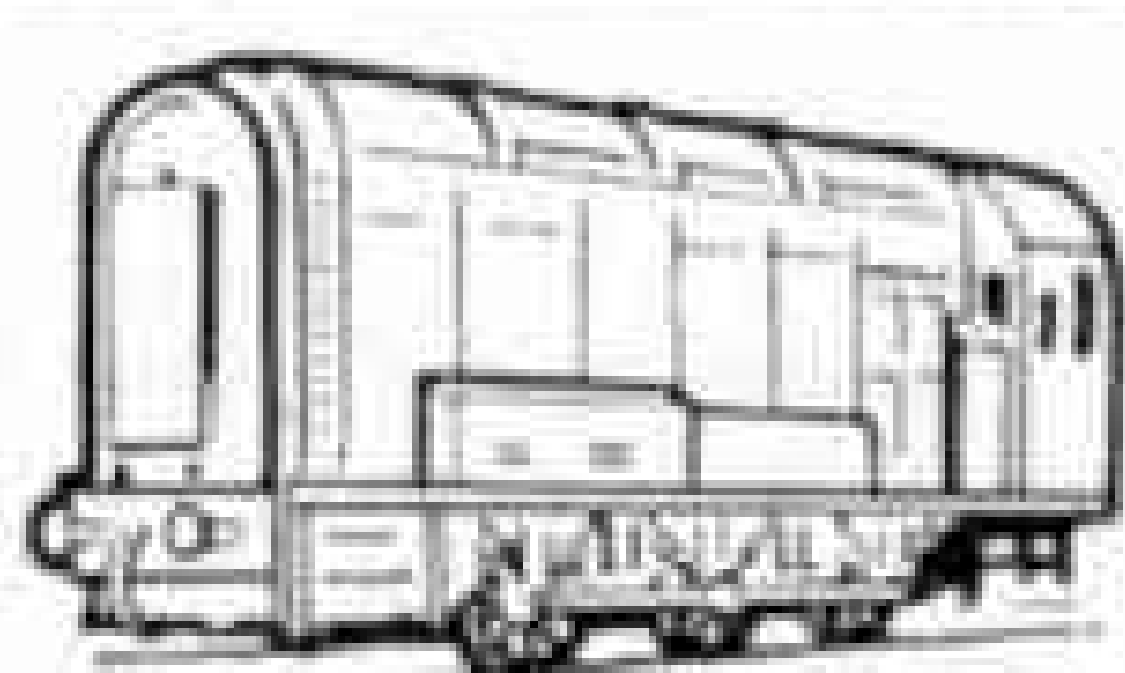
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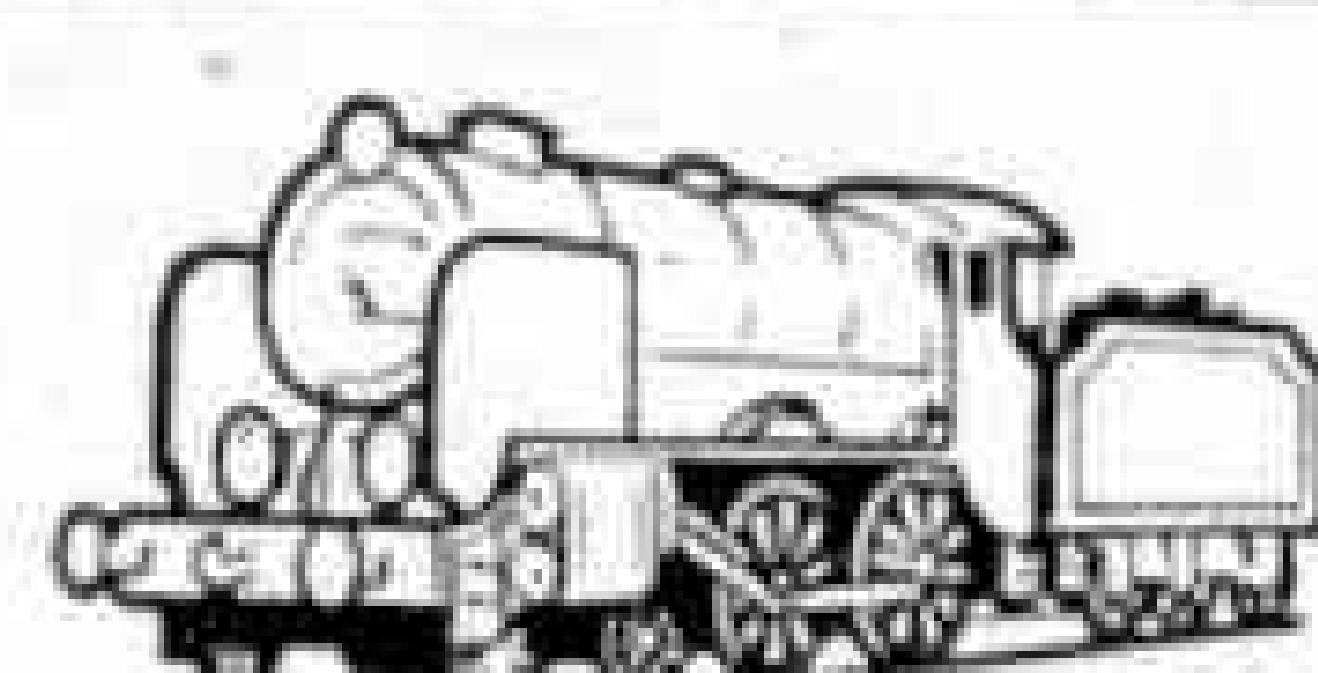
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He's remembered - Have you?



He's posting his application for a new 1959/60 Dinky Toys Collector's Licence. Present holders are reminded that their current Licence expires on the 30th June and application should be made for renewal by completing the special page in the existing Licence. New members are welcome and all applications should be addressed to the Secretary, Dinky Toys Club, Meccano Limited, Binns Road, Liverpool 13.

Next Month: "THE SEVERN WILDFOWL TRUST"

MECCANO

MAGAZINE

Editorial Office:
Binns Road
Liverpool 13
England

EDITOR : FRANK RILEY, B.Sc.

Vol. XLIV
No. 6
June 1959

Britain's Space Programme

AS I write this the news has just reached me that Great Britain is to have its own space programme. There is no intention of seeking to shoot off rockets to carry space vehicles to the Moon and

programme of scientific work of the kind contemplated will probably be much greater than that from Moon rocketry. The idea occurred to me some time ago that rockets for the Moon or beyond, which of course are

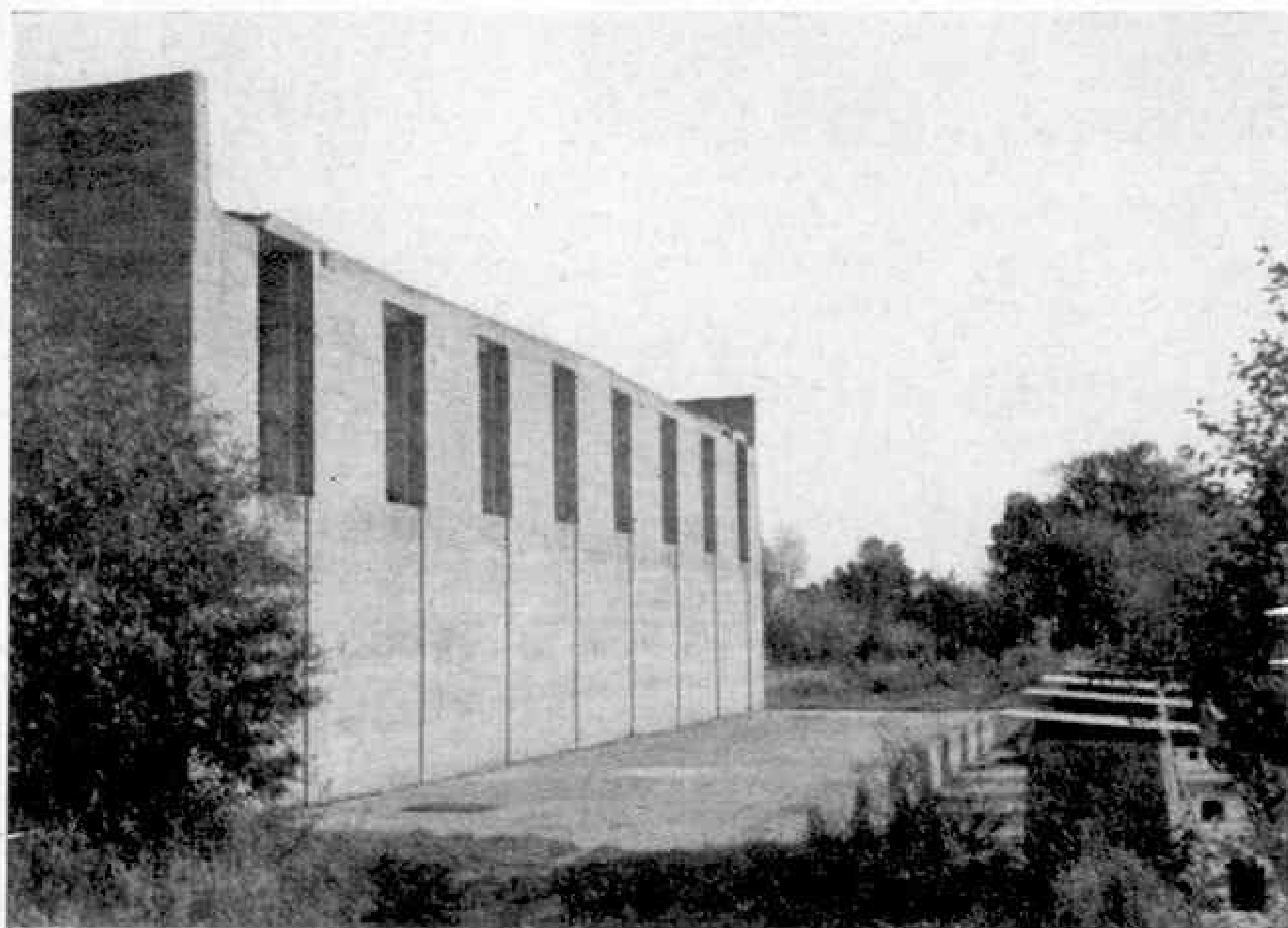
lost to us, could carry much unwanted material into the gigantic dustbin of outer space, and I have been interested to find that it has actually been proposed to get rid of waste radioactive material in this way.

At the time of writing no details are available of the rocket programme itself, but a modified version of the British Blue Streak can be used for placing the small satellites to be used in orbit, and the firing could well be carried out at Woomera, the now famous atomic testing ground in Australia. The satellites themselves may be American, but it is

understood that the instruments in them will be British in design. By the time that you read this more details of the coming British space activity may be known, and I hope that you will have found this forecast correct.

It is good to know that British scientists and engineers are to take a great part in the adventures of the Space Age.

The Editor



What is this? Its building was started before the war, and is to be resumed shortly—it may indeed have already begun. A small prize will be awarded to the sender of the first correct solution opened when the competition closes on 5th June.

beyond, or even of firing into orbit bigger satellites than the U.S.A. and Russia have produced. Instead the idea is to place small satellites in orbits round the Earth, so that information can be gained that will have important bearing on such things as navigation, long-range weather forecasting and radio communication.

These satellites may not be very spectacular in comparison with those that have gone up into space before them, but the ultimate gain from a well-thought-out



An oxy-acetylene burner cutting through the tyre of a wheel returned to the Acton depot of London Transport for servicing. Great care has to be taken that the wheel centres are not damaged by heat.

Ways with Wheels

How London
Transport
Repairs Them

NO rolling stock can roll without wheels. Obvious, but a fact. And wheels, however tough the metal of which they are made, are subject to wear.

Actually, it is the tyres that wear mostly—but did you know that train wheels have tyres?

The subject of wheels is an extremely interesting one. If you went along to the Acton works of London Transport, and paid a visit to the wheel shop there, you would be just absorbed.

It is a busy place. Pairs of wheels, on their axles, pass through at the rate of some 230 a week—that is, 11,500 pairs in a year. They come from two sources. Of the weekly quota on average 150 pairs are sent in from the depots and 80 are from heavy overhaul cars.

Two men working as a team operate the machine that expands steel tyres by means of electrical heat, ready for fitting on wheels.

As near as possible all wheels that come in are serviced and returned in the same week.

But to the job itself. An invariable rule in the shop is that directly a pair of wheels is received the axle is tested. This rule is adhered to strictly, and no wheels go the rounds until the axle has been subjected to the searching powers of the ultrasonic fracture detector. If there is evidence of a



Tyre fitting in progress. The expanded tyre is laid on the ground, and by careful manoeuvring of the lifting gear the wheel centre, on its axle, is lowered in, to be left for about fifteen minutes while the tyre cools and shrinks on.

fracture the wheels are removed from the axle, which undergoes a magnetic test to locate the flaw. With hardly an exception any irregularity detected by the electronic machine does prove to be a fracture and the axle is scrapped.

So important is this finding of fractures that the detecting machine is itself tested each day to see that it is operating correctly. Thus the chance of an axle breaking in service is reduced to an absolute minimum.

Wheel centres are also carefully watched, chiefly for faulty spokes. These can be repaired by welding, but two damaged spokes adjacent to one another are a danger and a wheel in this condition is considered of no further use.

It is easy to imagine the pounding that tyres are given as they speed their load along mile after mile of track. But most



people would be surprised to see how solid steel, inches thick, can show such signs of wear.

Each motor wheel comes through the shop once a year; trailer wheels every two or three years.

If the tyre is worn badly enough to warrant replacement an oxy-acetylene burner is set to work. This cuts through the tyre, which, having been shrunk on by heat, immediately loosens. Great care has to be taken with the burner, for, at the melting point of steel, its heat can ruin the wheel centre.

Although loosened, the tyre still has a good grip and another device, a hydraulic tyre extractor, is employed. The axle and wheels are held in a horizontal position and the tyres forced outwards. They come free under a pressure of between four and five tons a square inch. In the old days, of course, they had to be knocked off with a sledge hammer—a long and laborious task.



In this picture the ring can be seen just inside the edge of the tyre. Great pressure is exerted by the lip-rolling machine to force the lip of the tyre over the ring and hold it in position.

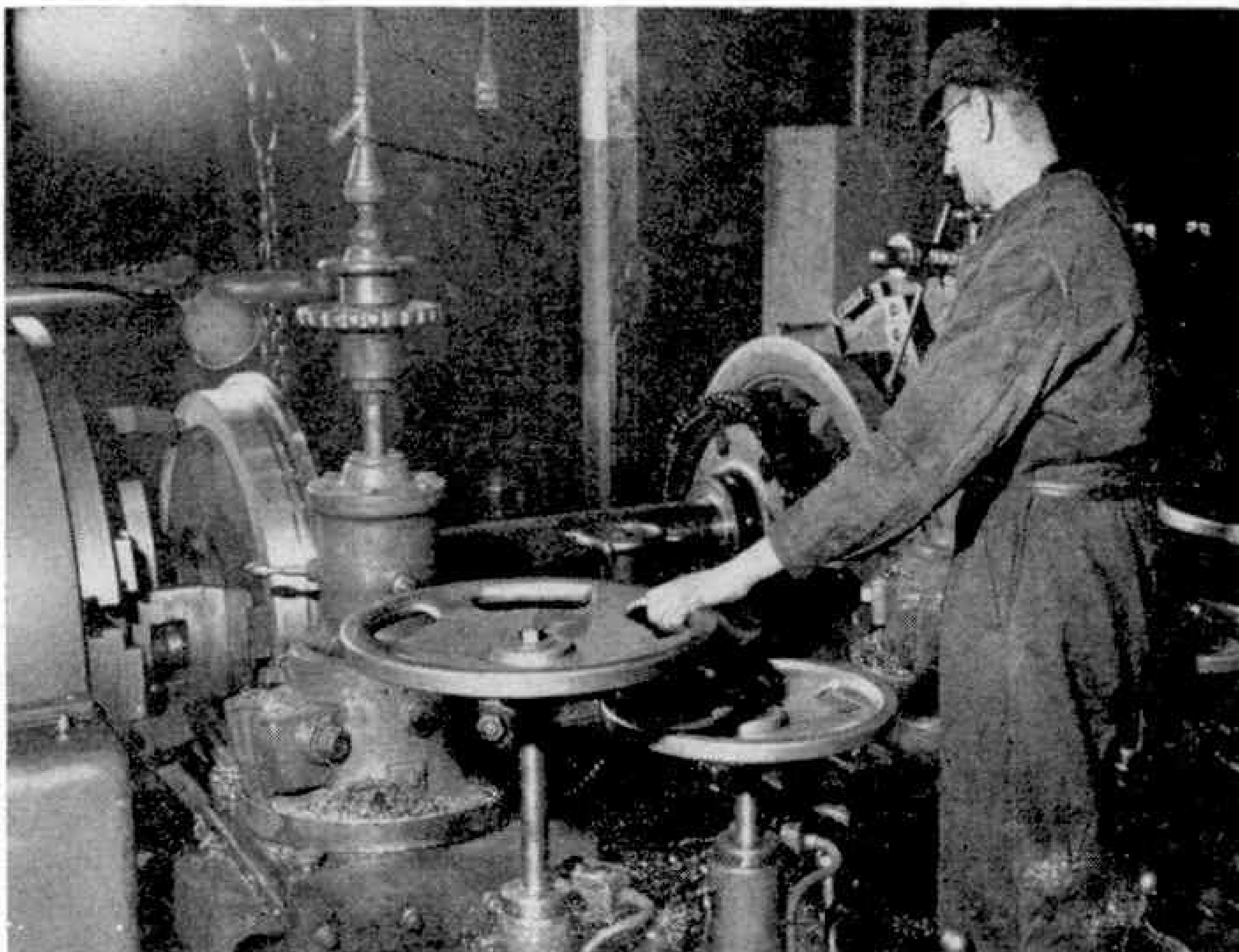
A wheel being turned. By the use of highly efficient cutting tools it is trimmed down until it reaches the correct profile.

Then the new tyres go on. First, they are bored—a precision process which must leave them a few thousandths of an inch smaller than the diameter of the wheel to which they are to be fitted.

The tyre is expanded by electrical heat and dropped over the wheel centre. In fifteen minutes it has shrunk on and has a powerful grip.

A retaining ring is next placed round the edge of the wheel centre. A special machine exerting a pressure of 1,500 pounds a square inch is used to roll the lip of the tyre over the retaining ring to keep everything in position and complete the job. All that remains then is for the wheels to be turned to the correct profile.

That is the process, but it is not the entire work of this department. There are other aspects of the job which space does not



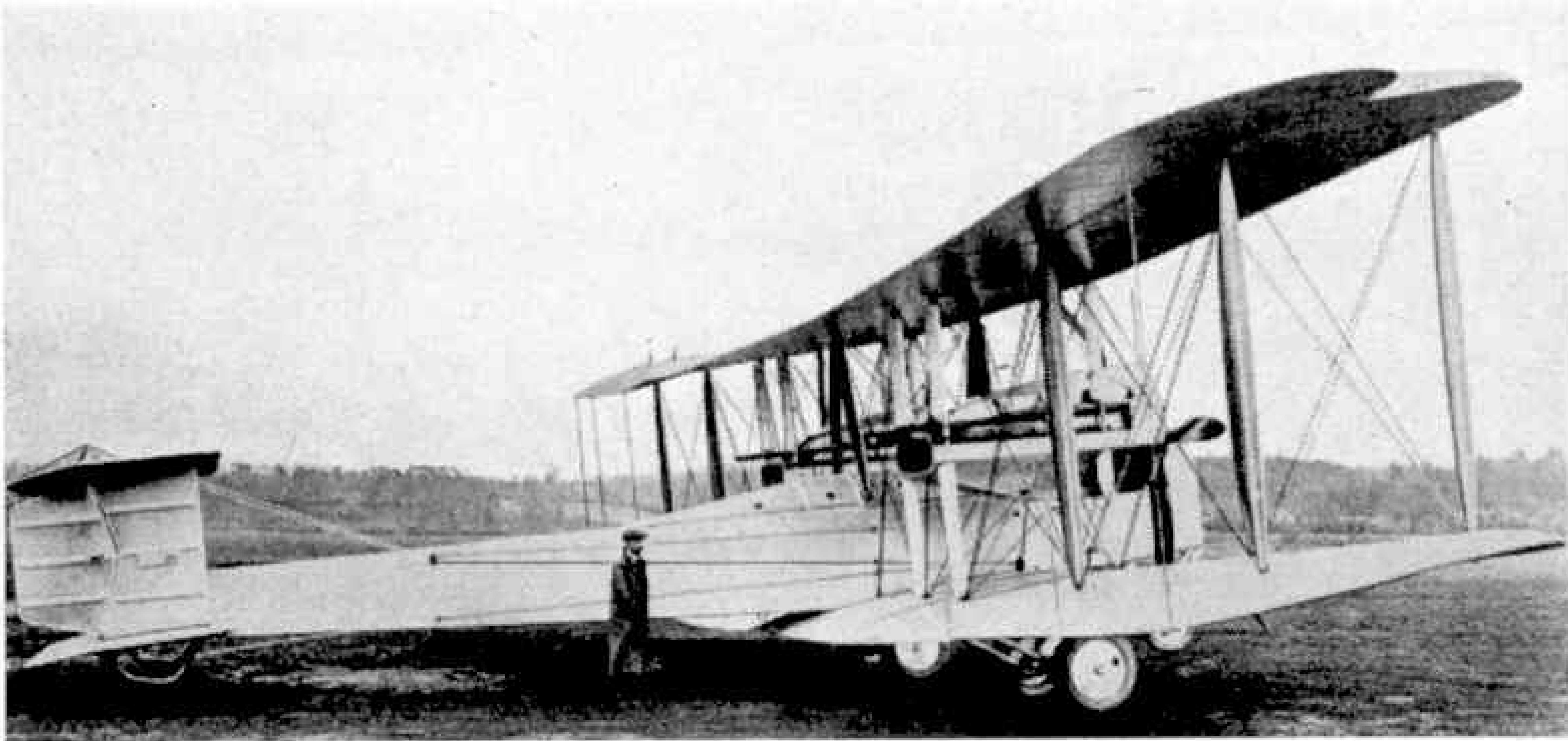
permit us to dwell on in detail; the highly developed tools that are used; the system of marking every wheel and axle so that it can be quickly located; the charts that show the progress of work; the various types of wheels that have to be dealt with.

But there is one thing we would stress: Acton is proud of its high standard of maintenance. Test and test again is the watchword, and London can rest assured that, in spite of peak-hour operation that so heavily burdens us, and the leeway to be made up in replacing worn stock with new, no underground railway system in the world is run with more attention to safety than London's.

This article, and the accompanying pictures, are reproduced by courtesy of London Transport.



The foreman axle tester puts an axle, thought to be fractured, to the magnetic test, his mate meanwhile turning the axle slowly round.



The Vickers Vimy biplane in which Capt. John Alcock and Lt. Arthur Whitten Brown accomplished the first-ever non-stop flight over the Atlantic, in June 1919. Illustration by courtesy of Rolls-Royce Ltd.

Atlantic Anniversary

By John W. R. Taylor

THIS month marks the 40th anniversary of the first-ever non-stop flight over the Atlantic, by Capt. John Alcock and Lt. Arthur Whitten Brown, in a Vickers Vimy biplane with Rolls-Royce Eagle engines, on 14th–15th June, 1919. The two airmen, who were knighted for their achievement, are now dead; but you can see their aeroplane in the National Aeronautical Collection of the Science Museum at South Kensington, London. Its frail wood-and-canvas structure leaves little doubt of the courage needed to set out on such an adventure at a time when even a short London-to-Paris flight might involve half-a-dozen forced landings.

Passengers arriving at London Airport from New York today, on board fast comfortable jet-liners, are reminded of that first crossing by the monument to Alcock and Brown that is depicted on the cover of this month's *M.M.* But few can have any idea of what the two young airmen experienced during the 16 hours that intervened between their take-off in Newfoundland and their landing in a bog at Clifden in Ireland.

They sat in an open cockpit in grim weather, without any automatic pilot, blind flying instruments, de-icing equipment, or even radio for most of the trip. They had two engines, but this merely doubled the chance of a failure, as they could not have flown on one. Over the great ocean they were cut off from the world, with only their black cat mascot, Twinkle-toes, to keep them company.

I was able to "meet" Twinkle-toes recently, and inspect the log of the journey, kept by Lt. Whitten Brown. Because it conveys something of the spirit that made the exploit possible, I think you might like to read some extracts from it.

The two airmen took off in their heavily-loaded aeroplane at 4.15 p.m. Newfoundland time and were promised good weather. As so often happened in those days, they soon discovered that the weather-men had been too optimistic. At 5.21, Brown wrote:

"Wireless generator smashed — the propeller has gone." After that they were without any form of radio, and even their navigation equipment was useless in the bad weather.

"I can't get any obs. in this fog, will estimate that same wind holds and work on dead reckoning."

"6.5. Starboard inside exhaust pipe burst." From then on, it was so noisy in the cockpit that they could only communicate by passing written messages to each other.

" $\frac{1}{2}$ way !!! alter to 110°."

"14.55. Immediately you see sun rising point machine straight for it and will get its compass bearings." A quarter of an hour later they flew into a terrible thunder-cloud, which caused their wings and engines to ice up, and were nearly lost. Brown simply recorded:

"15.10. Got into spiral down to 100 (feet)", and then:

"15.50. This is a great trip. No ships or stars or anything. (Continued on page 320)

Strange Inventions

By Charles Henry



Sketches by
John Morgan.

MANY strange inventions have been patented, some so ludicrous, even on the most cursory examination, that it is difficult to imagine that anyone should have been so misguided as to apply for a patent for them. Yet patented they were.

For instance, there have been adventures in the design of hats for men, which, incidentally never seem to have been adopted. But even more than in design, there have been patents for hats themselves, patents to make them waterproof, to drain them and so on, and for hats to keep their wearers warm or to keep them cool.

Can you imagine a hat with the crown separated from the sides? Springs, slides, or staples unite the two parts, and then, presto, you raise or lower your crown according to the temperature you require—simple. Possibly the man who always finds his hands full, for one reason or another, may appreciate the design. Personally, it seems just as easy to carry your hat if you're warm.

Another design suggested a hat made of tin, copper, or other metal. It had no mention of ear pads to deaden the noise if you happened to be wearing your hat in the rain!

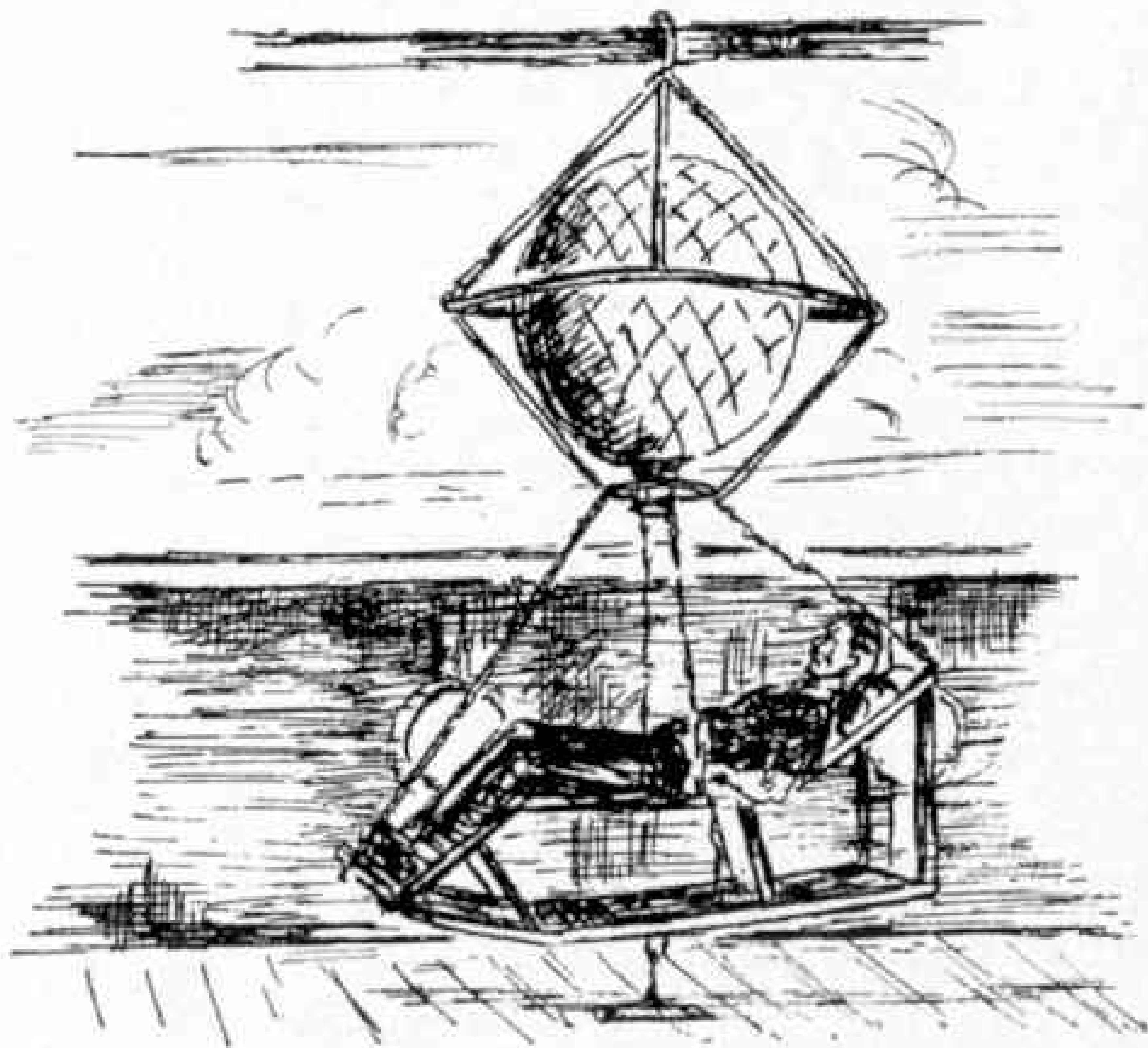
To quote another brainy hat inventor, "my invention consists in the introduction into coverings for heads, of such material as shall form with the moist skin, during the wearing of such coverings, a voltaic or galvanic combination, and develop a current of

electricity, the electrical current so developed, curing or relieving headaches or other painful affections in the head of the wearer." To think that patent medicine manufacturers waste time and money in advertising! Just get a hat to get a good head.

The next head covering was designed for comfort. To quote the designer again. "It is a cap, which ensures safety, ease and comfort to the wearer when travelling. It consists of one, two or three air-tight circular tubes to be inflated when required for use." We have crash helmets today, but imagine the pretty air hostess, for example, carrying a dainty pump attached to the waist belt, and blowing your caps up when required. We have heard of people "blowing their tops off." Can this be the origin of the phrase?

Wouldn't you like a hat designed to protect your eyes from wind, dust or what you will? Just over the brim, this had two apertures made to be fitted with glass, gauze or anything suitable. No mention is made of how the hat stops over the ears when in "normal" use.

Another inventor improved on this last design. He made the hat in two parts. The upper part rested on the head, and the lower part, carrying the brim, slid over it.



It had windows as in the first edition.

An all weather hat? Yes, with a fine weather surface, made from cloth or the like, and a wet weather surface made from waterproof material. You just reverse the hat according to the weather. Hats have been patented with "striking" facilities for your matches, hats containing a mirror, hats that expand to fit any size of head.

Do you ever carry a walking stick? Perhaps you would be interested in the idea of one inventor. Not content with the mere sword stick, he had to invent one to carry a revolver, a telescope, pen and ink, paper, a pencil, a knife and drawing materials—a sort of walking emporium, in fact.

Perhaps you will be crossing the sea this year for a holiday. Sea sickness? Think nothing of it! An invention suggested a cure. Each passenger's chair should be attached to a balloon and connected to the deck with a ball and socket joint. The balloon would be kept from swaying too much by attaching it to a rod above.

Are you good at getting up in the morning? No? Perhaps a new type of invention for a bed will interest you. You set your alarm and then, at the required time, the foot of your bed collapses—so simple!

Perhaps you would care to bath in bed. A four poster type of bed was invented for that purpose. The canopy forms the vessel for the shower, one of the four uprights contains a pipe for the water. The only thing not mentioned in connection with this invention, is the comfort, or otherwise, of the bed when used for its normal purpose, namely, sleeping.

Talking of baths, there was the invention of a vapour bath. It was built in box form

with holes for the head and hands. This one *has* been in use.

Other oddities include a child's bib fitted with a sort of trough round the bottom, and all waterproof, an umbrella with windows, and a muff and neckwear—shades of the old feather boa!—that were



filled with air and so were handy as lifebuoys. Another umbrella could be converted into a walking stick and, what is more, a walking stick with a spear head attached. A rain absorber to stop rain running off hats and umbrellas is another wonderful invention, but perhaps the greatest of all was the "Rhabdoskidophorous." This was not so formidable as it sounds. It was merely the name for an umbrella the silks and ribs of which could vanish into the stick, when of course it becomes just a handy walking stick.

So, inventors, never despair. However unusual your idea may be, you may rest assured that far more unusual ideas than yours have been patented. Derive consolation, too, from the fact that some of the most simple ideas have made fortunes for their lucky inventors, who have come from all walks of life, and were not necessarily engineers or scientists. Keep thinking, keep sketching, and if you don't succeed in making a fortune, you will, at least, help to keep some poor, struggling patent agent out of the depths of poverty.



Space Notes

By J. Humphries, B.Sc.(Eng.), A.M.I.Mech.E., A.F.R.Ae.S.

Atomic Rockets

For many years now the U.S. Atomic Energy Authority has been working on atomic jet propulsion for aircraft. Progress has been slow and it would appear that as yet not one powered flight by an atomic aircraft has been made, although a fully operating reactor has been taken aloft many times. But in the most recent report of the A.E.C. to Congress, tucked away in a single short paragraph, is news of a programme for "Nuclear Propulsion for Unmanned Vehicles". One of the projects in this programme is nuclear rocket propulsion, known as Project Rover. A relatively low power experimental reactor, called Kiwi A, using solid fuel elements and a gaseous "working fluid", is now being tested at a special propulsion establishment, the Nevada Test Site.

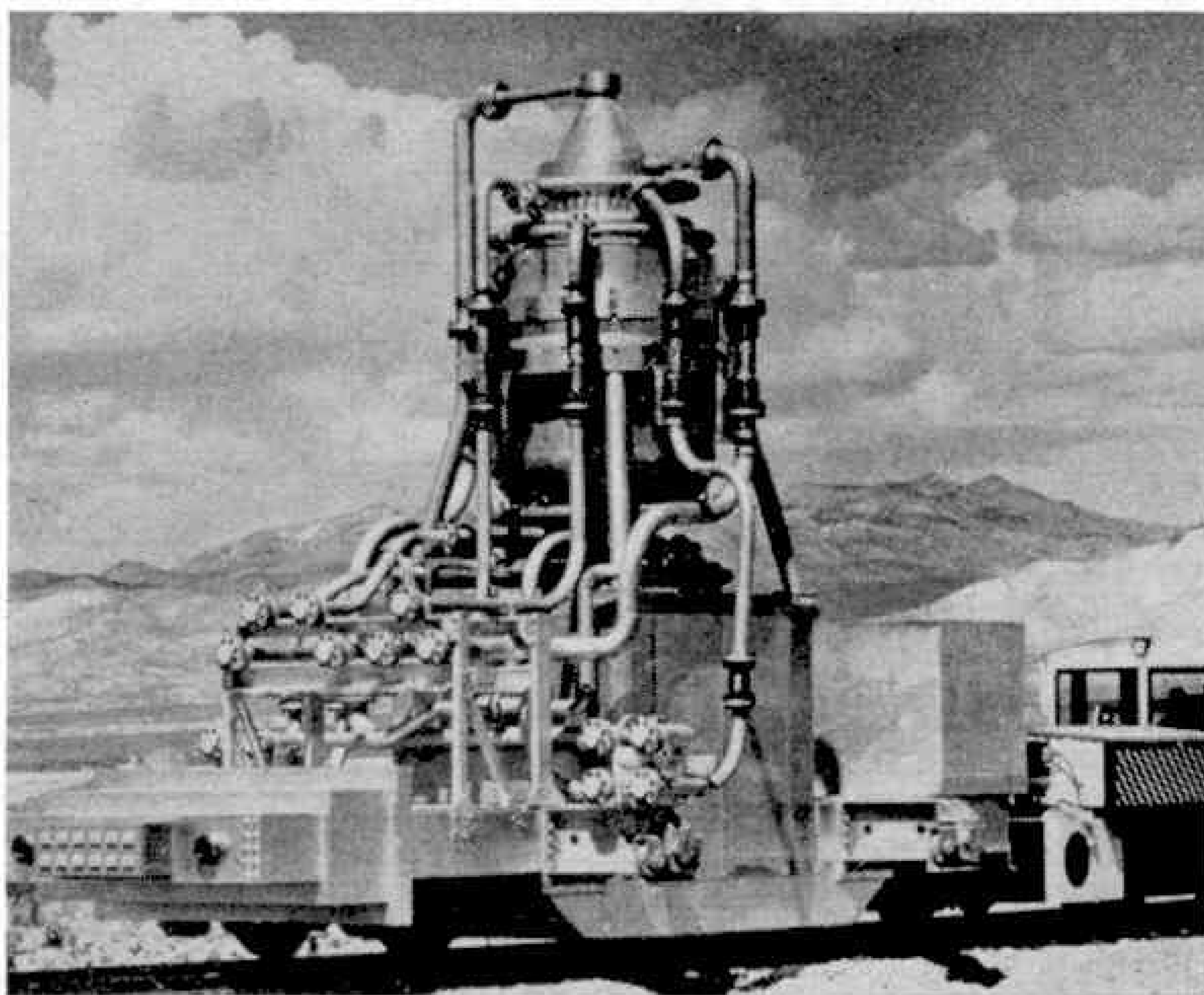
The principle of the working fluid atomic rocket is shown in the drawing. It is similar to an ordinary rocket in that the aim is to produce thrust by expanding hot gases through a nozzle, but it differs in that the gas is heated by a reactor and is not produced by burning a fuel and an oxidant together. The working fluid will be pumped and may be used to cool the chamber, as shown, before being passed through the reactor. The best fluids are hydrogen or chemicals containing a high proportion of hydrogen, such as ammonia or water.

One obvious drawback to such a rocket is that the reactor must be at a higher temperature than the hot gas. Such a rocket is unlikely to be advantageous if it uses a gas temperature of less than $1,500^{\circ}\text{C}$. The reactor fuel elements must then work at a temperature that is well out of the range of normal power reactors, and their development is likely to be a major part of the programme.

For testing, the rocket will be placed on a test car with the nozzle pointing upwards,

and will be fired from a control position a mile or so away. As it will be enclosed in a protective cell it will be possible to approach when firings are not in progress to carry out certain adjustments. Repairs will not be possible and when the life of a test assembly is finished, it will be taken away on a remotely-operated railway to an area where it will be taken to pieces—also by remote control.

The gases from the rocket will become radioactive and firings will only take place



Soon aircraft may be driven by atomic jet propulsion. This picture shows a full-scale model of the first atomic power rocket, on the flat car on which it is to be tested.

when the wind is in the right direction. This is very much a long-term project and at best it is unlikely that an atomic rocket will be flown in less than five years from now.

Rocket Combustion Chambers

The function of a rocket is to produce hot gases and expand them to a very high exhaust velocity. The principle is the same for all rockets, but the chamber shapes evolved and the methods devised for their manufacture vary enormously.

In the solid propellant rocket there is, of course, no liquid for cooling, and so the

designer arranges his propellant so that it acts as an insulator between the combustion zone and the case. But the nozzle must withstand the hot, high-speed erosive gases, with a temperature as high as $2,000^{\circ}\text{C}$ and a velocity of over a mile a second, during the whole burning time. Some modern rockets use a special composition nozzle containing a high percentage of asbestos, whereas others rely on a comparatively heavy steel nozzle to absorb all the heat.

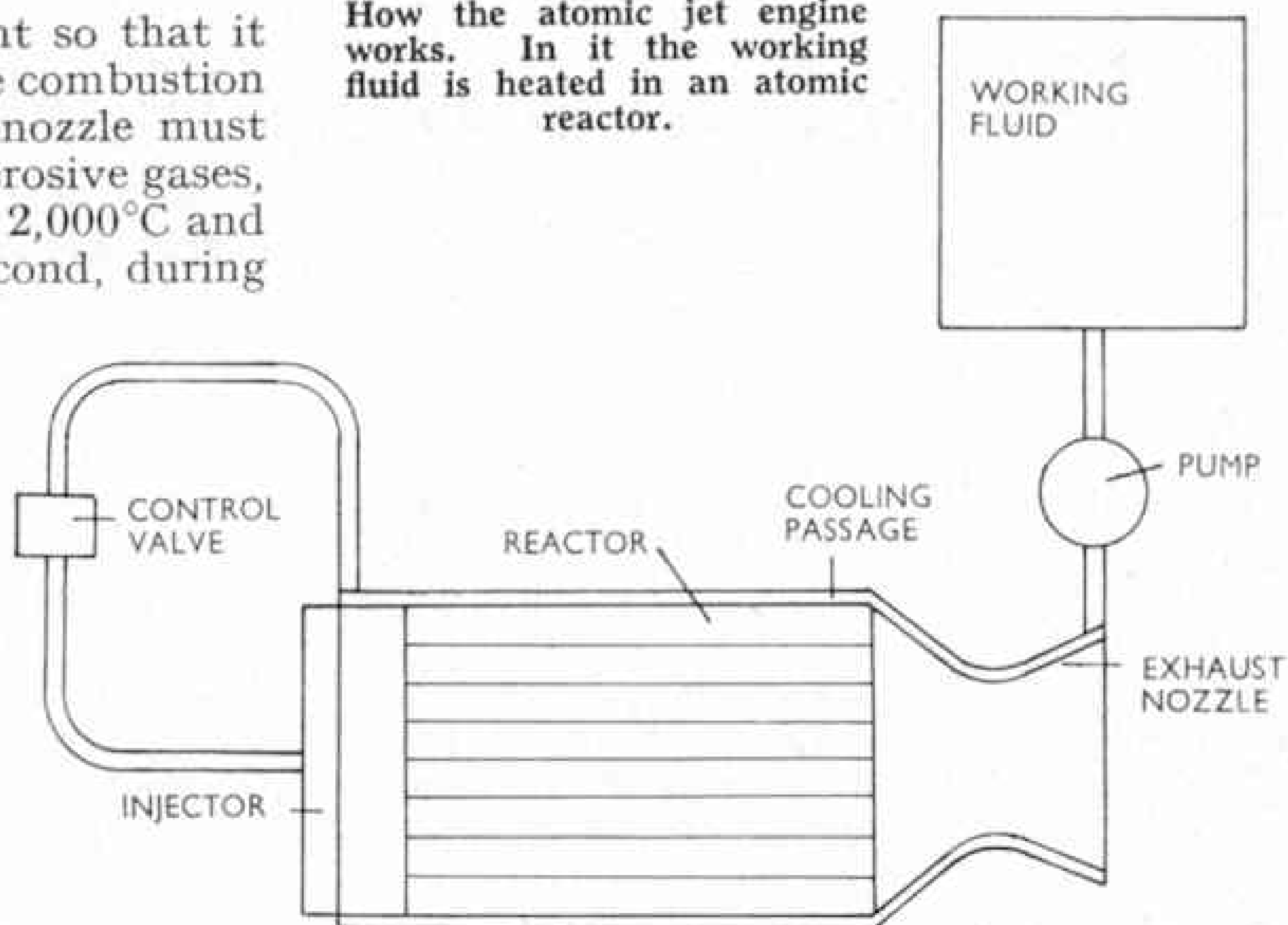
Design of liquid propellant chambers is to some extent easier in that one of the propellents can be used as a coolant. Thus the higher combustion temperatures of the liquid propellents can be accommodated for indefinite periods of time, whereas the solid propellant motor has a limited burning time.

In earlier days a simple double-wall construction of sheet metal with the coolant passing between was used, but with modern high-thrust rockets such construction would lead to very thick walls and consequently heavy chambers. One common modern form of construction is to build the chamber up of thin-walled tubes on a former and then to braze the whole assembly together. The



Building up a tubular construction combustion chamber for rockets. The tubes are brazed together after assembly.

How the atomic jet engine works. In it the working fluid is heated in an atomic reactor.



coolant is passed from the injector end down one tube to the outlet end of the nozzle, back along the adjacent tube to the injector and hence into the combustion chamber.

A Satellite "Post Office"

According to preliminary studies made by R.C.A. Astro-Electronic Products Division in the U.S.A., letters between America and Europe may, in the near future, be sent both more quickly and cheaper "via satellite" than by air!

Letters would be written on a standardised form, placed in a facsimile apparatus and relayed by land-line to a central transmitting station. From there they would be sent by micro-wave transmission via a satellite to a receiving station on the other continent. Further land-lines would pass the letters to main post offices where they would be printed and distributed.

A combined television and photographic process known as Ultrafax was developed ten years ago, which is capable of scanning and transmitting 480 pages of writing per minute. Reconversion into letters can be dealt with by a new electronic printing process.

The best satellite to use for this purpose would be one in an orbit above the Equator at a height of 22,000 miles. This would circle the Earth once in 24 hours and would appear to remain stationary above the same point on Earth. A payload of several hundred pounds would be needed and this is well within the capabilities of existing rockets. A time between posting and delivery of 2-2½ days is quoted, but it should be possible to reduce this to one day, at least between large towns. (Cont. on page 320)

Newport's Transporter Bridge

A Graceful Colossus of Steel

By L. Bruce Mayne

THE transporter bridge at Newport, Monmouthshire, is a landmark that can be seen for twenty miles or more from both sides of the Bristol Channel. It is not unique in Britain, for there are others at Widnes and Middlesbrough, but it has been said that the Newport bridge is a work of art and the finest of its type in Britain. Its light, graceful lines have endeared it to

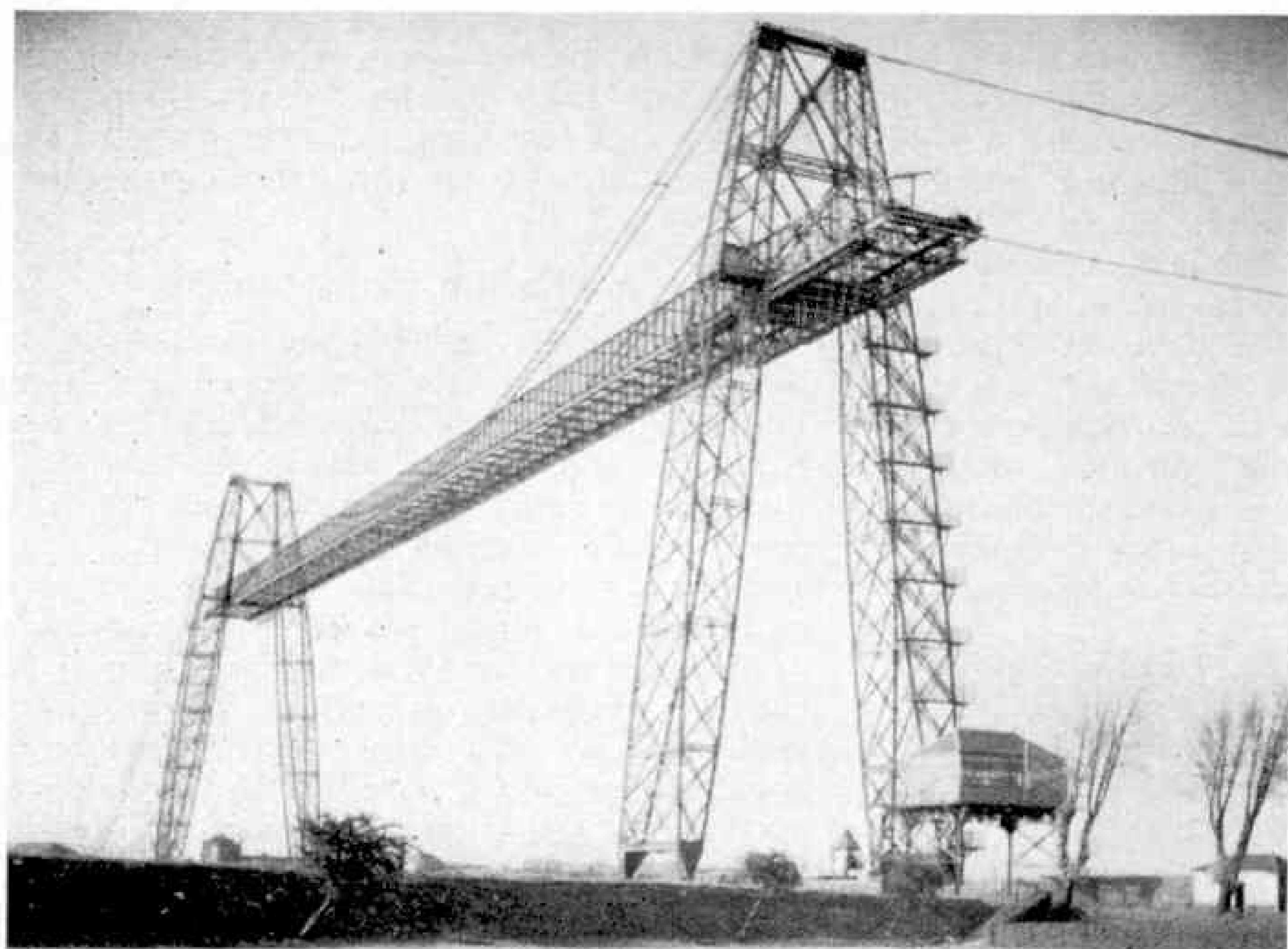
is a mile and a half upstream in the centre of the city. It was built in 1800, and widened and partly reconstructed in 1866 and 1892-3.

Between 1869 and 1889 various schemes were put forward for connecting the two banks of the river, which is tidal, schemes that would allow tall-masted ships to use the river without hindrance. Parliamentary sanction was obtained by the Corporation

in 1869 to operate a ferry, and again in 1889 to build and maintain a pedestrian subway, but neither scheme became a reality.

The problem was again tackled in 1898, when proposals for ferries, subways, high-level, bascule, swing, lifting and rolling bridges were considered. It was then decided to build a transporter bridge, because it would cost considerably less than a subway capable of taking vehicular traffic, or a high-level bridge with sloping approaches. A

swing bridge was rejected, partly because it was felt that the large piers required would be an obstruction to river traffic. But there was also the reason that swing bridges of ordinary width can only be navigated with safety against the stream, and the Usk has only a relatively short period of high tide when shipping movement is possible. A transporter, it was thought, would not offer an obstruction to shipping, and could be built for a sum that would not prove too heavy a drain on the Corporation's finances. In 1900 Parliamentary sanction was obtained to go ahead with the building of the bridge.



The 242 ft. high towers of the Newport suspension are a Monmouthshire landmark. The bridge has been built to withstand wind speeds of up to 110 m.p.h. The motor house is at the eastern end of the bridge. The illustrations are from photographs by the author.

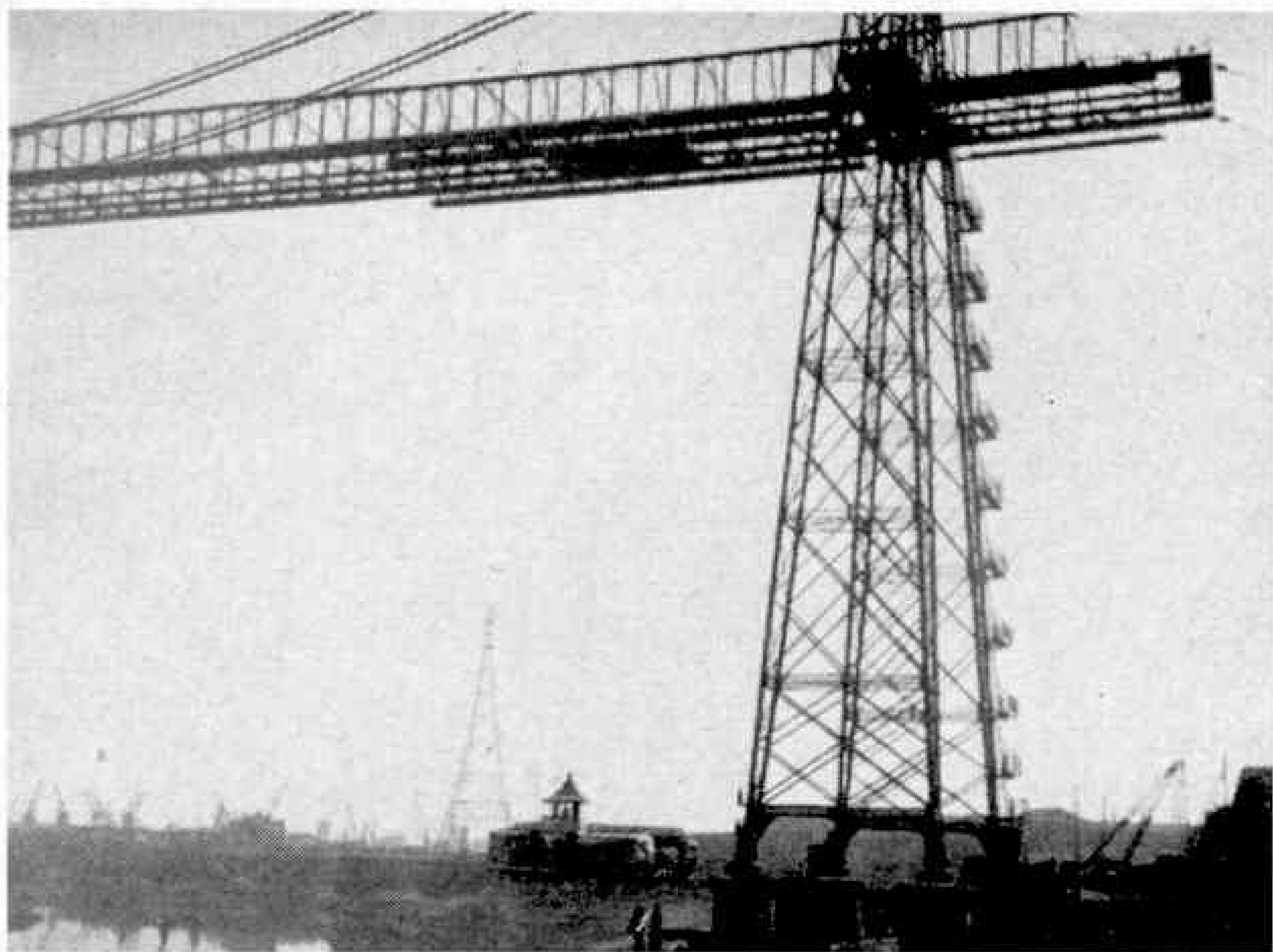
the hearts of the people of Newport. The bridge at Widnes is scheduled to be demolished in the near future, but Newport's bridge will continue to fulfil its original purpose of providing an adequate river-crossing and, according to the Borough Engineer, Mr. E. A. Middle, it still has a reasonably useful life.

The bridge is the lowest one across the river Usk, connecting Pillgwenlly, a residential district, with the main industrial area and the docks. It is a link in road B 4237 and helps to alleviate to some extent the congestion at Newport's only other road bridge across the river. This

Just at the turn of the century transporter bridges were fashionable, particularly on the Continent, where a French engineer, M. F. Arnodin, had built this type of bridge across the Seine at Rouen, at Rochefort and Nantes. He also built one at Bizerta, in Tunis, and is famed for his Pont Transbordeur at Marseilles, which was destroyed in World War II.

Members of Newport Corporation visited Rouen to inspect the bridge there, after which it was decided to invite Arnodin to design a bridge for their city, in collaboration with their Borough Engineer, Mr. Robert H. Haynes. Work began in the autumn of 1902 and four years later, without a life having been lost in constructing this Colossus of steel and wire, the bridge was officially opened by the then Lord Lieutenant of the county, the Rt. Hon. Viscount Tredegar, on 12th September, 1906.

Despite the rain, which continued to fall all the afternoon, some 600 guests who had been officially invited to the ceremony and thousands of Newport citizens arrived on

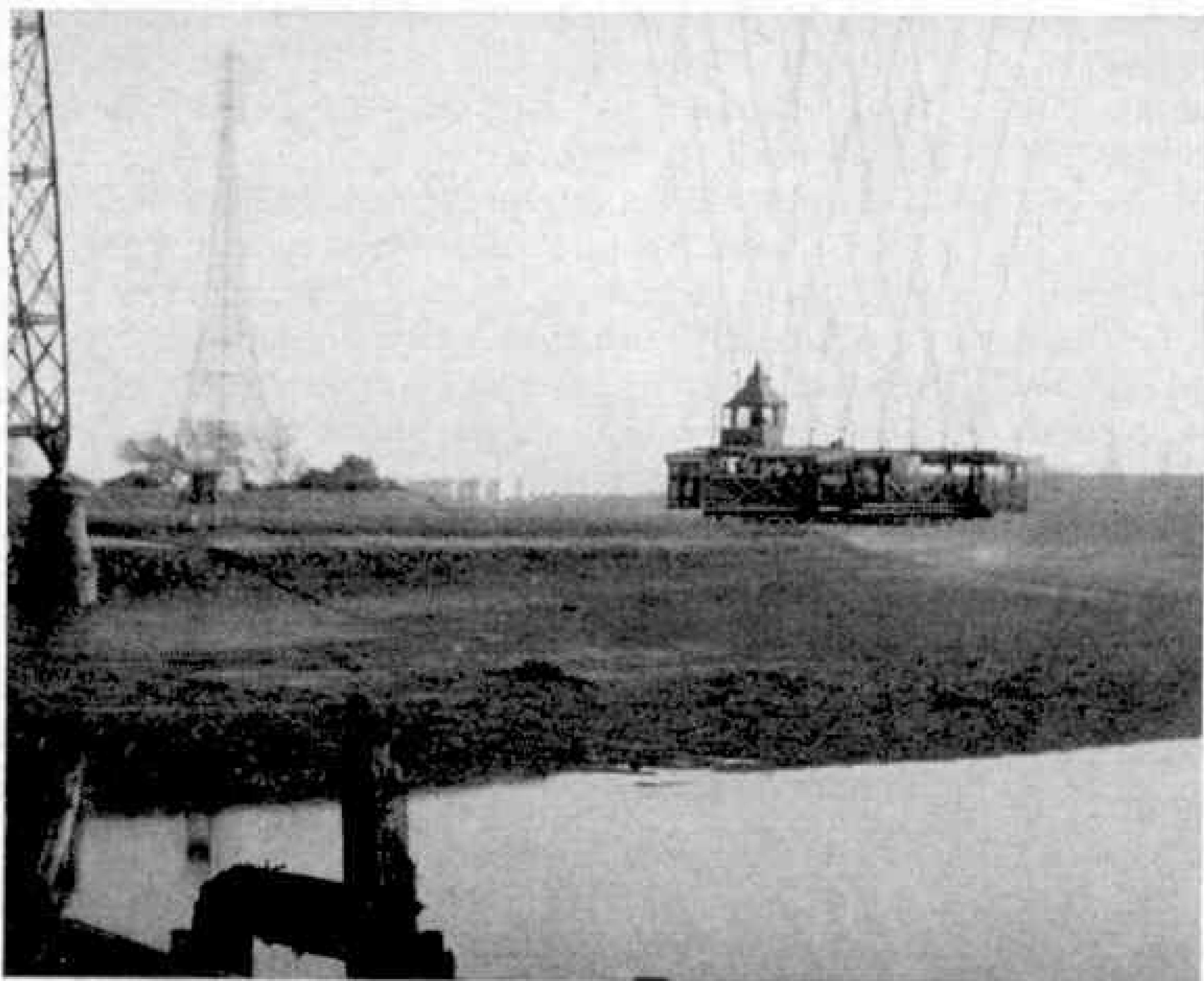


A moving car with 60 steel wheels runs along the top platform, 177 ft. above the river, and the travelling platform, which is 33 ft. long and 40 ft. wide, is suspended from it.

the banks of the Usk at noon for the great event. The Mayor greeted Lord Tredegar on the west bank, after which the Lord Lieutenant boarded the platform and worked the controller. Almost imperceptibly at first the platform moved away from the bank and slowly gathered speed. The crowds cheered along the gaily decorated river banks, detonators were exploded and the band of the 4th Battalion of the South Wales Borderers played the National Anthem.

The first "official" trip was a complete success, the crossing being made without the slightest vibration or swaying. That night one of the towers was illuminated and hundreds of people paid the halfpenny toll to cross the river.

The bridge is built to withstand a maximum wind speed of 110 m.p.h. and has been tested with a load of 120 tons — although the breaking strain of the cables by which the platform is suspended from the travelling car high overhead on the stiffening girder is 550 tons. The towers, 242 ft. high, are 645 ft. apart and the height of the stiffening girder, which actually spans the river, is 177 ft. The travelling platform is 33 ft. long and 40 ft. wide,



The control cabin of the travelling platform of the Newport transporter bridge has a "Pagoda" roof. The 30 cables carrying the platform are crossed to form triangular trussing to prevent swaying in high winds.

forming a carriageway of 28 ft. and two 6 ft. footways.

On each bank there are four foundation piers. These are masonry wells mounted on steel shoes or curbs, and were sunk to depths varying from 78 ft. to 86 ft. by pneumatic pressure. When the shaft reached a depth of about 10 ft. compressed air was used to keep out the water and it is believed that this was the first instance in Britain where masonry wells were sunk under air pressure.

Two 35 b.h.p. electric motors in the motor house at the eastern end of the bridge supply the power that moves the platform, which has a total weight of something over 50 tons. The truck that travels overhead has 60 steel wheels and is pulled to and fro by wires drawn by a winch worked by the electric motors. The driver controls the motion from the pilot house, which resembles a Chinese pagoda, built on the upstream side of the platform, but in an emergency the moving platform could be controlled from the motor house, where the instruments and controls are duplicated.

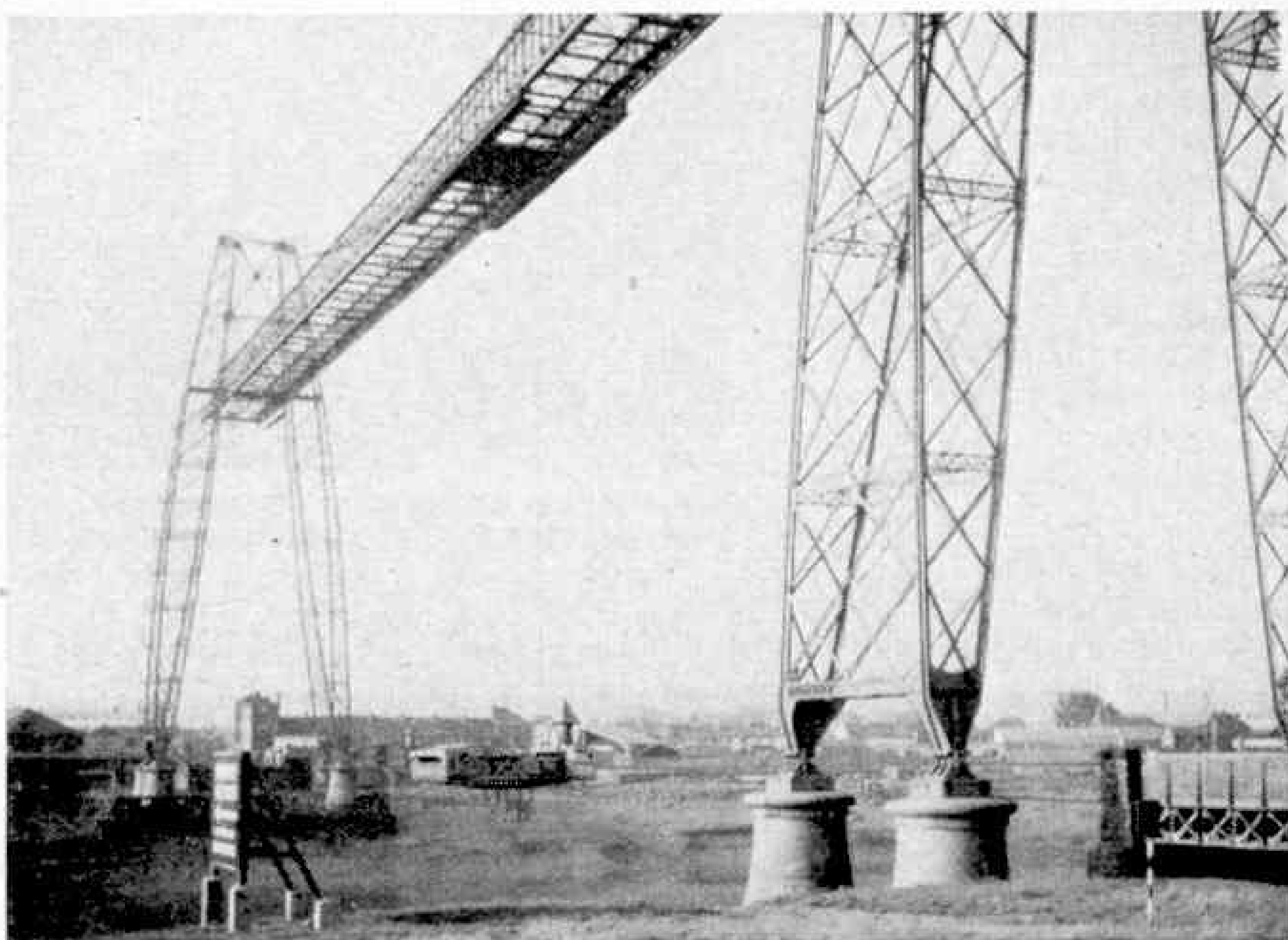
At night, in accordance with the requirements of Trinity House, the towers and the travelling platform carry navigation lights.

Eleven men are employed on the bridge and it is estimated that some 4,500 vehicles use the bridge each week. It is impossible to estimate the number of pedestrians who use the bridge, since all tolls were abolished in 1946, but some 6,000 people a year pay their sixpences for the privilege of climbing up the tower and walking along the top platform. From this they have an extensive view of the docks, the city and the surrounding countryside.

The first British transporter bridge was the one, already referred to, that was built at Widnes to span the Mersey and the Manchester Ship Canal between the Lancashire town and Runcorn in Cheshire. It was erected for the Widnes and Runcorn Bridge Co. and has been in service since

1905, although in 1911 it was taken over by the Widnes Corporation.

This bridge, like the one at Newport, is a steel structure built on the suspension principle, with masonry anchorages and approaches. But its cost, £130,000, was much higher than that of the Monmouthshire bridge, which was £65,603. The transporter car is a platform 55 ft. long and



The Newport transporter bridge across the River Usk was completed in 1906. It is the first bridge passed by vessels proceeding upstream from the Bristol Channel.

24 ft. wide, and clears high-water by 12 ft. It scrapes over the top of the Ship Canal wall with 4 ft. 6 in. to spare. The total span is 1,000 ft.—the longest span of any road bridge in Britain—and the towers stand 190 ft. high.

The travelling platform, which is worked by an electrically-operated winch system, and is certified to carry a maximum load of 20 tons, completes the crossing in three minutes and there is a regular 20-minute service. Each year some two million pedestrians pay their twopences to cross, while 250,000 vehicles also pay tolls.

The days of the Widnes transporter bridge are numbered, for by 1960 it is expected that a new high-level road bridge will have been completed. Then the transporter will be demolished.

The Middlesbrough transporter bridge was constructed between 1909 and 1911 to carry road A 178 from Middlesbrough to Billingham on the other side of the Tees. It was built on the cantilever principle and is 850 ft. long, although the river span is only 470 ft. between the towers.

From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

England's Highest Waterfall

Hardraw Force, near Hawes in Wensleydale, is said to be the highest waterfall in England. It has an unbroken drop of nearly 100 ft. In the accompanying photograph its height can be realised on looking at the tiny figure of a visitor on the right, who is on the path that goes behind it.

There is an interesting legend connected with the Force. It is said that early in the reign of Henry VIII two men, Thirler and Eric, murdered a man named Jostrel and buried him on the moor. During the night a heavy storm swept the body from the grave and next morning Eric, terror-stricken, found the body at the foot of the fall. The monks of the nearby Hardraw Chantry assumed that the victim had committed suicide and buried him at the cross-roads with a stake through his heart. Each year, by night, Eric went to do penance at the grave, and the third year he forced Thirler to go with him. The next morning they were found, Thirler dead with scorch marks on his face and his knife-blade melted. Eric was still alive and in a dying confession he told how a thunderbolt had struck them as they were fighting with their knives.

The ravine formed by the action of the water is famous for its acoustic qualities and in it many band contests have been held, the first in 1885.

N. R. WHITMORE (Skipton).

Forest Fire

The four of us stood in silence watching a huge mushroom-shaped cloud rising slowly above the horizon.



Hardraw Force, a waterfall nearly 100 ft. high in Wensleydale, Yorkshire. Photograph by N. R. Whitmore, Skipton.

"I guess that's the beginning of a bush fire" said Ed, our survey party chief.

During my stay in Canada I had heard many stories of the dreaded bush fires that destroy thousands of acres of timber and now I found myself right in the vicinity of one. As a surveyor on the staff of the Highways Department I had witnessed many interesting occurrences since my arrival from Scotland the previous year, but the sight of this gigantic smoke stack dwarfed everything else and I stared at it in awe.

Hurriedly we gathered our surveying gear and dashed for our van situated a few hundred yards off. Soon we were speeding along the highway in the direction of the smoke and within minutes realised that the fire could not be far from the small village where we had made our base.

This village was on the north bank of a river that was about a quarter of a mile wide at this point. On arriving at the outskirts we found the pall of smoke was directly south of the village and about a mile away on the other side of the river. We had to abandon our van and cross a one-track railway bridge. During our journey over we kept a sharp lookout, for it would have been most uncomfortable had a train crossed at this time.

On reaching the other side we caught up with a few villagers accompanied by a Forest Warden, all carrying various tools to combat the fire. The burning trees and undergrowth were cracking like a thousand rifles and hurrying towards the scene we were passed by numerous forms of wild life fleeing in blind panic from their dreaded enemy.

In a short time we were at the perimeter of the fire and on receiving instructions from the Warden commenced beating the flames, while others with axes set to felling trees some distance away. The smoke and flames were almost unbearable and after a couple of hours had elapsed we were in a state of exhaustion. But we kept on and it soon became obvious that the fire was almost under control.

As more volunteers arrived we withdrew for a break, with eyes smarting and throats like sandpaper. A soft breeze had sprung up and blew in a northerly direction, so that the fire was trapped by the river and there was no further danger.

Some hours later the majority of the fire fighters were told to return home as they were no longer needed. We were included in this number and were soon trudging back to our hotel feeling very tired and hungry, but most satisfied with our day's adventure.

J. C. WILLIAMS (Farnborough).

Editorial Contest Result

The picture on the Editorial page of the issue of the *M.M.* for April last was sent in, along with the above article "Forest Fire", by its contributor J. C. Williams. It showed one of the towers erected in forest areas in Canada from which fire wardens keep a look out for the plumes of smoke that mark the beginning of a forest fire. Similar towers are used in the United States.

The first correct description of the tower that I read on 7th April last was from David Herbert, London N.W.8, to whom I sent a Postal Order for 10/6. There was such a good entry that I awarded further prizes of 2/6 each to J. B. Pailing, of Ledbury, B. Hill, of Barrow and A. Scott, of York.

THE EDITOR.



A striking shot by Mr. M. W. Earley of the up "Tees-Tyne Pullman" leaving Peascliffe Tunnel, near Grantham. The engine is A4 No. 60008 "Dwight D. Eisenhower."

Railway Notes

By R. A. H. Weight

Three-figure Speeds on Great Northern Line

Speeds of 100 m.p.h. or more have been attained on a number of occasions by expresses on several British main routes and especially the Great Northern Line to and from King's Cross. These have not been by any means usual so far, nor necessitated by the normal schedules. In a number of instances they were during special test or demonstration runs, though also achieved by fine locomotives in excellent trim when their keen crews were making up time at suitable points.

It must be whispered that these speeds were sometimes exceeding a general limit of, say, 90 m.p.h. laid down. Such official maxima allow a margin on the safe side, however, and these thrilling speed bursts are only attempted now and again where there are fairly straight downhill stretches on track maintained at a high standard of perfection. The latter, needless to say, is always the aim of British Railways for their fast-express routes.

The notable A4 streamlined Pacifics built by the former L.N.E.R. in 1935-8 primarily to haul very fast limited loaded flyers that ran up to the outbreak of war in 1939, have more reported 3-figure speeds to their credit than any other class. The world-record steam maximum of 126 m.p.h. was attained in 1938 by *Mallard* down the famous Stoke descent between Grantham and Peterborough, and exciting figures such as 109, 113, 112½ twice have been attained with ordinary or special streamlined trains when extra efforts had been planned. In addition there have been recent reliably logged instances of 3-figure maxima on the G.N. Line when making up time by A4s hauling heavier regular expresses, such as the *Elizabethan*, *Talisman*, *Flying Scotsman*, etc.

My good friend, Driver W. Hoole of King's Cross shed, an intrepid though careful expert soon to retire, has probably figured in more such exploits here than

anyone else, mainly since 1955. He averaged 101 m.p.h. over the 12¼ miles, largely downhill, between Hitchin and Sandy, with a top speed of 107½, with No. 60003 *Andrew K. McCosh* on the down *Morning Talisman*, gaining 19 min. on a 60 m.p.h. timing to Darlington despite signal stops and other delays following an unavoidably late start. With Sir *Nigel Gresley*, heading the south-bound *Tees-Tyne Pullman*, having a similarly fast schedule in the opposite direction and a heavier train than usual, after a number of extra slowings in Yorkshire he was soon before time after a still higher maximum down Stoke Bank! Most of these engines do not normally carry speed indicators; drivers acquire an uncanny knack of judging speed by sound and so on.

The English Electric Company's 3,300 h.p. diesel-electric *Deltic*, the most powerful locomotive of any kind so far run on lines from London to the North—22 of the type are on order for the East Coast route—while on recent trial to and from King's Cross has created new running records, particularly in acceleration and uphill, as well as passing the "magic 100" on its fitted speedometer gauge several times. Mr. Hoole has taken a notable driving share in this also.

Locomotive Stock Changes

New diesel-electric locomotives lately added to stock were numbered and allocated as follows: Type 2: A1A—A1A Nos. D5520-3 to 30A, Stratford Shed; Co-Bo Nos. D5708-14, 17A, Derby; Bo-Bo Nos. D5005-8, 5B, Crewe South (on loan to S.R. Kent lines); D5009-10, 5B (loan to Derby); and Nos. D5317-9, completing a series of 20, and D6100-7, all to 34B, Hornsey. The foregoing are all main-line mixed traffic units.

For shunting: Nos. D3571-2, 17B, Burton; D3665-8, 71A, Eastleigh; D3669, 75C, Norwood Junction; D3687-91, 34-, King's Cross district; D3728-32, 64A, St. Margaret's, Edinburgh; and D3810-18, 86B, Newport, Mon. (Pill).

Diesel-hydraulic: B-B express No. D803, *Albion* and B-B mixed traffic Nos. D6301-2, all to 83D, Laira, Plymouth.

Most of the 22 Britannia Pacifics operating on the Great Eastern Line, E.R., are based at Norwich depot, though continuing to work also express and other trains from Clacton, Yarmouth, Parkeston Quay and Cambridge, etc., chiefly to Liverpool Street.

Five W.R. 0-6-0 pannier tanks noted at Nine Elms S.R. Shed have been transferred among others for empty carriage and local duties around Waterloo and Clapham Junction; they are of the No. 4600 series.

Just before going to press I was able by invitation of the B.T.C. to inspect the first of the new Peak class, powerful main line diesel-electric locomotives for the L.M.R. It is No. D1, named *Scafell Pike*, built at Derby.

Aboard Hastings Diesel-Electrics

As I reported at the time, since June last year nearly all the London to St. Leonards and Hastings passenger services over the S.R. direct route to and from Charing Cross or Cannon Street, have been taken over by 6-car diesel sets. These have electric transmission with actual drive and controls similar



A head-on view showing the driving end of a motor coach on one of the 6-car diesel units used on the Hastings route. B.R. (Southern Region) Official photograph.

to those in the motor coaches of the main line electric sets that pick up current from the third rail.

The diesels of course drive their own generators and are self-contained, with a complete engine of 500 h.p., and transmission gear in the end driving coaches of each set. There is thus approximately 1,000 h.p. available, or double that figure when two sets are coupled to make a 12-coach train, as is usual at busy times, especially between London and Tunbridge Wells. On that route it is customary to attach or detach one set at the Central station in the Kentish spa town, which forms a separate slow service between there and Hastings, serving intermediate stations. The other half forms the fast portion, calling normally at Crowhurst, junction for Bexhill, West.

The trains are of what is called multiple-unit type, as usual when no locomotive is employed. The combined motors in each set or sets operate in unison and can be controlled from any of the driving compartments.

The Southern Region runs a considerable number of diesel-electric two-coach sets, as distinct from the plain diesel-mechanical units found elsewhere in increasing numbers, on shorter runs in the Hampshire area, between Hastings and Ashford, and on the Bexhill branch mentioned above, for instance. But the 6-coach corridor trains built for the London-Hastings service are unique in Britain as multiple unit express diesel-electrics. Owing to narrow tunnels and restricted clearances, their overall width is less than usual, though they are well appointed, and more recent sets have coaches of the standard 63 ft. 6 in. length for B.R. main-line service.

Sets numbered 1031-7 run as fast portions generally.

They contain bright and very modern buffet cars, comprising a small restaurant with large and small tables, movable chairs and large windows; a kitchen containing gas range and grill, refrigerator, etc., and staff quarters; and a bar and counter for light refreshments. Light meals freshly cooked, such as bacon and eggs, are a popular feature.

Running more frequently at regular times, an average saving of 10-15 min. has been effected between London and the Hastings area, a journey of just over 60 miles along a most difficult route with calls at principal stations, compared with the previous Schools' performance. The steam service was good of its kind and I paid tribute to it last month. Rapid acceleration up to 75 m.p.h., or rather more, together with quicker climbing of the many hills, enables these diesels to maintain the much accelerated schedules with a little in hand on various sections to allow for extra delays.

Another Hastings-London (Victoria or London Bridge) service by the longer Lewes-Haywards Heath route is provided by multiple-unit electric 6-sets including Pullman car.

Locomotive Variety at Oxford

The W.R. station now deals with trains from the Cambridge-Bletchley, one-time L. and N.W.R. line, sometimes hauled by E.R. (ex L.N.E.R. or G.E.R.) locomotives. It is also an engine changing point for through inter-Regional express services, worked from Bournemouth, for instance, to Oxford by S.R. locomotives that traverse Western metals north of Basingstoke. So representatives of many varied classes may be seen there.

While at the station during a journey by the Birkenhead-Bournemouth train, reported in these Notes last November, when S.R. *Crewkerne* took over from W.R. *Chirk Castle*, I also saw S.R. and E.R. 4-6-0s respectively of the King Arthur and B1 classes, an L.M.R. freight 2-8-0 and an E.R. 0-6-0 of class J39, going through as light engines coupled.

There is considerable cross-country goods traffic. The lower illustration on this page depicts an interesting example of through passenger working from Oxford with an old-time locomotive.

Driverless Trucks at Newton Abbot, W.R.

For transporting packages between railway wagons and cartage vehicles in the goods shed, two experimental trucks move in accordance with an electronic guidance system following a single electrified wire laid just beneath the flooring and with safety devices. They can haul trollies of freight weighing up to 3 tons in all.



An ex-Great Eastern 4-6-0 No. 61516 well away from its parent system at Oxford. The train, bound for Cambridge via Bletchley, is leaving the W.R. main line. Photograph by Dr. G. D. Parkes.



America's Flying Jeeps

By John W. R. Taylor

IN these days of supersonics and *Sputniks*, it is easy to lose sight of the fact that the main job of an aeroplane should be to carry passengers quickly, comfortably and safely from one place to another. High speeds are essential for aircraft designed to fly very long distances or to drop atomic bombs on people with whom one does not agree; but for ordinary everyday air travel between places a couple of hundred miles apart they are just not worthwhile.

Back in the early years of this century the little Brazilian pioneer Santos-Dumont used to travel to the centre of Paris by airship, parking the aircraft outside his club as if it were the most natural thing in the world to do. To prove that such exploits were not restricted to lighter-than-air machines, Britain's Claude Grahame-White landed his Farman biplane on W. Executive Avenue in Washington, when he paid a call on the U.S. War and Navy Departments in 1910, although it must be admitted that the road was cleared of all other traffic.

Nevertheless, it is easy to see what a high price we have paid for speed in the air when we compare the two-mile concrete runways of an international airport with the tiny fields used by pilots 50 years ago; or when we spend longer in coaches riding to and

from airports before and after a short flight than we spend in the air, because larger airports cannot be built nearer to the city centres.

For example, the actual travelling time on the London-Paris route, in coaches and a 320 m.p.h. air liner, is about 150 minutes. As the total distance is only some 200 miles in a straight line, this represents an average speed of 80 m.p.h.

Now, if we could actually fly in a straight line between the centres of London and Paris, even in an aeroplane that cruised at only 150 m.p.h., we

should cut the travelling time to a mere 90 minutes, representing an average speed of 133 m.p.h., after allowing for take-off, climbing and landing.

This should be possible one day when giant helicopters like the Fairey Rotodyne are in service; but even then aviation will be fulfilling only part of its promise. The pioneers did not regard aeroplanes as being like railway trains or ocean liners, owned by big companies and carrying fare-paying passengers. They foresaw the day when everyone could have his own aeroplane, taking off from a small plot of land near his home to fly to the next town, to take his family on a picnic or drop in to see some friends a few miles away.

The picture at the head of the page shows the prototype Piasecki VZ-8P flying jeep. The two horizontal rotors are enclosed within the ring-shaped ducts, one in front of and one behind the pilot.

For years writers have been telling us that the coming of the helicopter has brought this dream nearer reality. But when one learns that helicopters are so expensive to operate that learning to fly them costs an average of £1 per minute, and that they are far from easy to handle, it is clear that the answer must be something different.

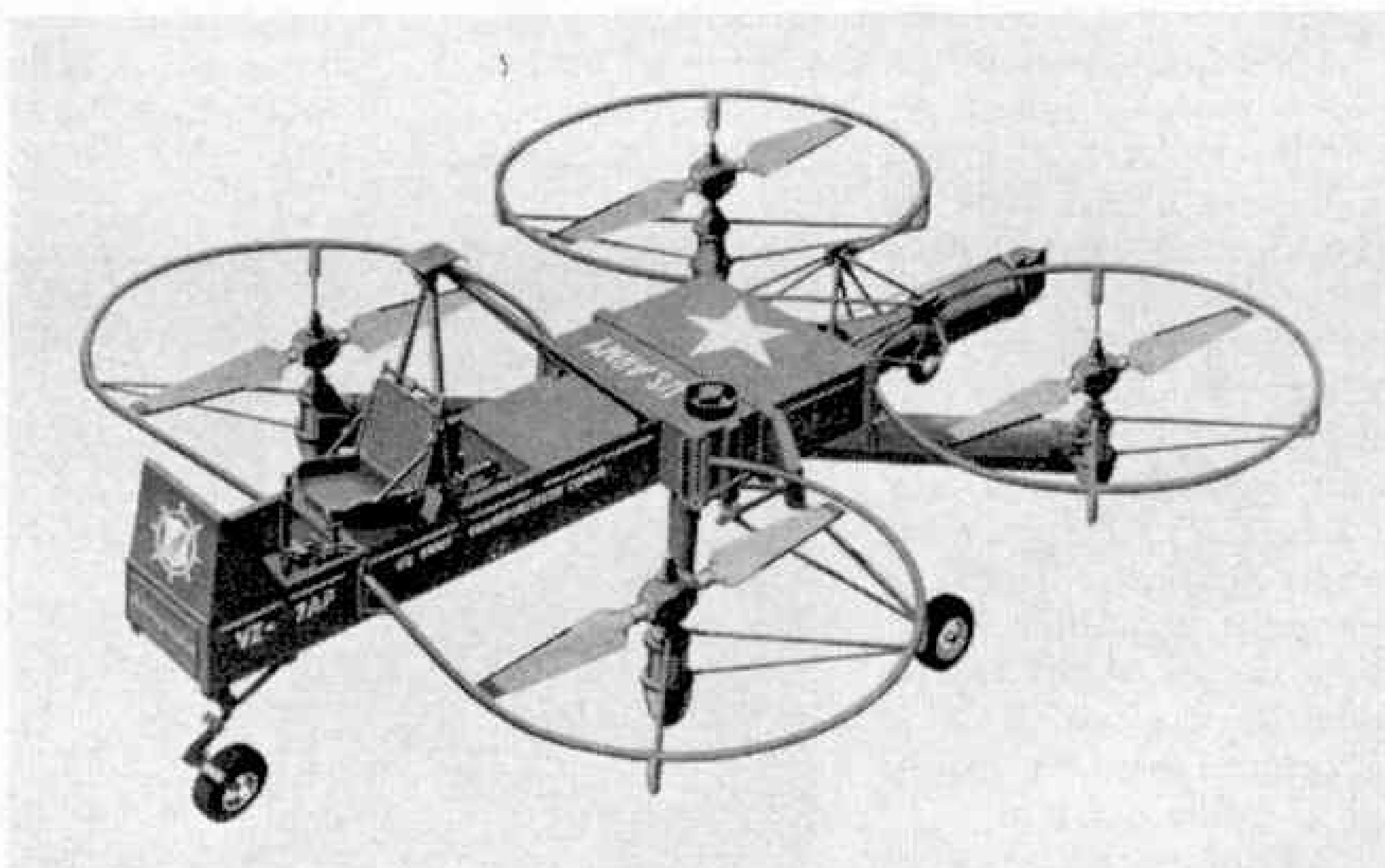
Over in America, at this moment, that "something different" is already taking shape.

The idea originated with the U.S. Army's Transportation Research and Engineering Command (TREC), who realised that it would be no use relying on jeeps and small trucks to haul men, guns and supplies around combat areas in any future war. Roads and bridges would be so vulnerable that the only sensible course was to produce a 'flying jeep' that would do everything possible with its surface counterpart, but would be able to travel literally anywhere, whatever the conditions of the land below.

It was clear that a helicopter would never do the job. The Army wanted something cheaper and simpler, which could be flown by anyone capable of driving a lorry, after a few hours' instruction. The machine did not need to fly either fast or high, because even a 30 m.p.h. aircraft capable of taking off and landing anywhere would clearly deliver its load more quickly than a faster

conventional transport, while it would be far more likely to keep out of sight of the enemy if it flew low over the ground, taking advantage of every scrap of natural cover.

The TREC requirements called for an aircraft no more than 10 ft. wide, presenting



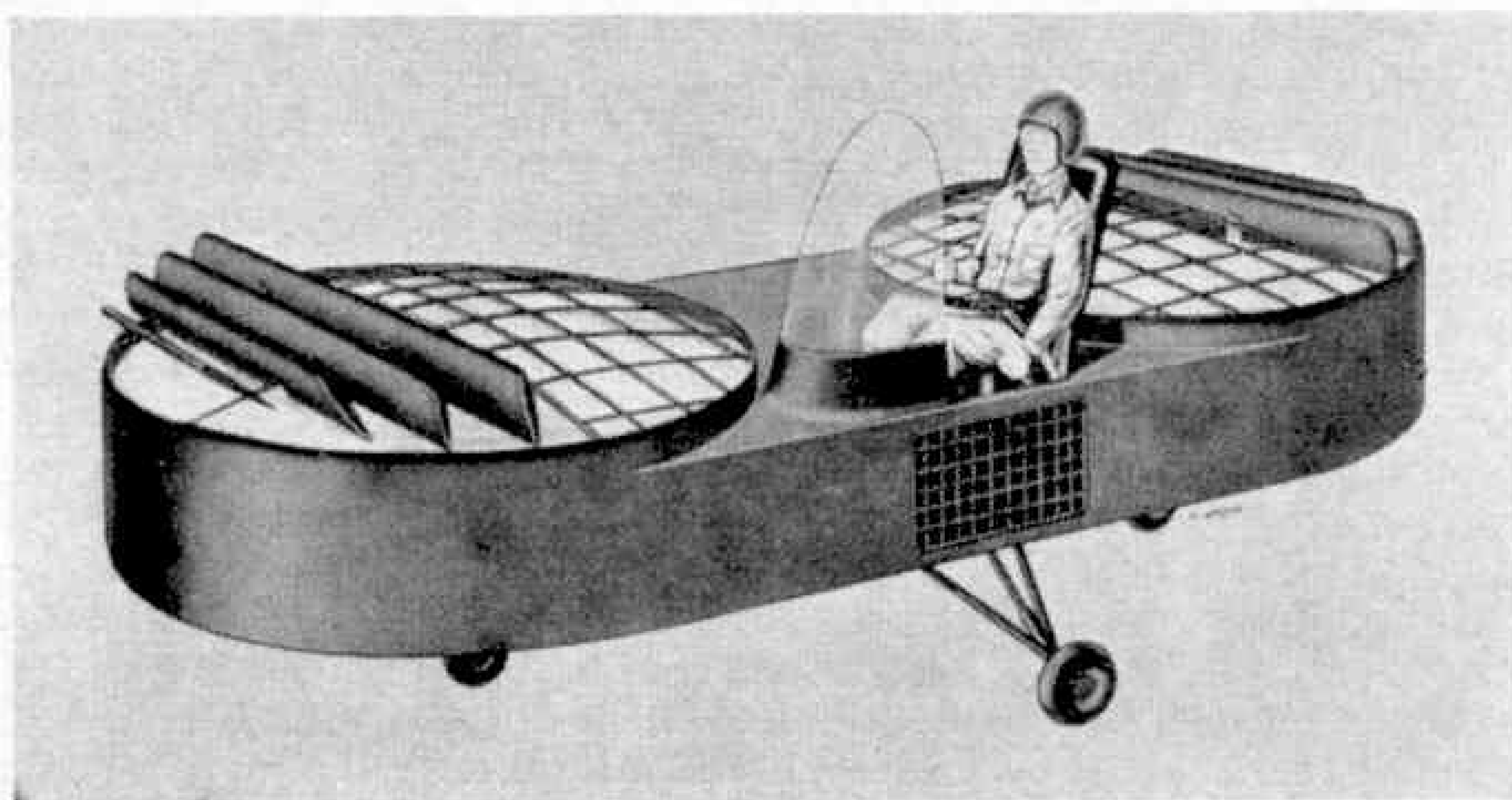
Another design for a flying jeep. The Aerophysics flying test vehicle. Photograph by Howard Levy, New York.

the smallest possible target, and so compact that four could go into the freight-hold of a C-130 Hercules transport aircraft. If possible, the "lift" system had to be beneath the level of the pilot's seat, so that he could peer over hills and hedges during reconnaissance sorties without the vehicle itself being seen.

Despite its small size, it was required to carry a load of at least 1,000 lb., including the pilot, and to weigh not more than 1,000 lb. itself. Its range had to be at least 25 nautical miles (28.7 ordinary miles) at not less than 28.7 m.p.h., and it had to

be easy to service with a minimum of special tools.

Altogether, 21 companies were invited to submit designs, and after studying the results TREC awarded contracts for prototype jeeps to the Aerophysics Development Corp. (a subsidiary of Curtiss-Wright), the Chrysler Corp. and Piasecki Aircraft Corp. All three winning



A third alternative. The prototype Chrysler flying test research vehicle. Photograph by Howard Levy, New York.

projects were planned to get their lift from the use of ducted fans; but whereas the Chrysler and Piasecki designs featured two fans, forward and aft of the pilot's seat, the Aerophysics VZ-7AP was based on the use of four fans.

In brief, a ducted fan consists simply of a rotor (or propeller) enclosed within a ring-shaped duct, which has the effect of making the rotor as efficient as an unducted one of much greater diameter. When mounted horizontally in a flying jeep, each fan works just like a helicopter rotor, producing lift to raise the machine off the ground. This sounds simple, but a helicopter rotor is a very complicated piece of mechanism which must be exactly right if the aircraft to which it is attached is to fly safely and under control.

As a start, changes in the pitch or twist of the blades have to be made when moving from vertical to horizontal flight and *vice versa*; and the entire rotor has to be able to tilt to enable the aircraft to thrust itself forward, sideways or backward, as required. If the pilot's controls are not highly efficient, the mere business of changing direction can create suddenly conditions that may cause an accident.

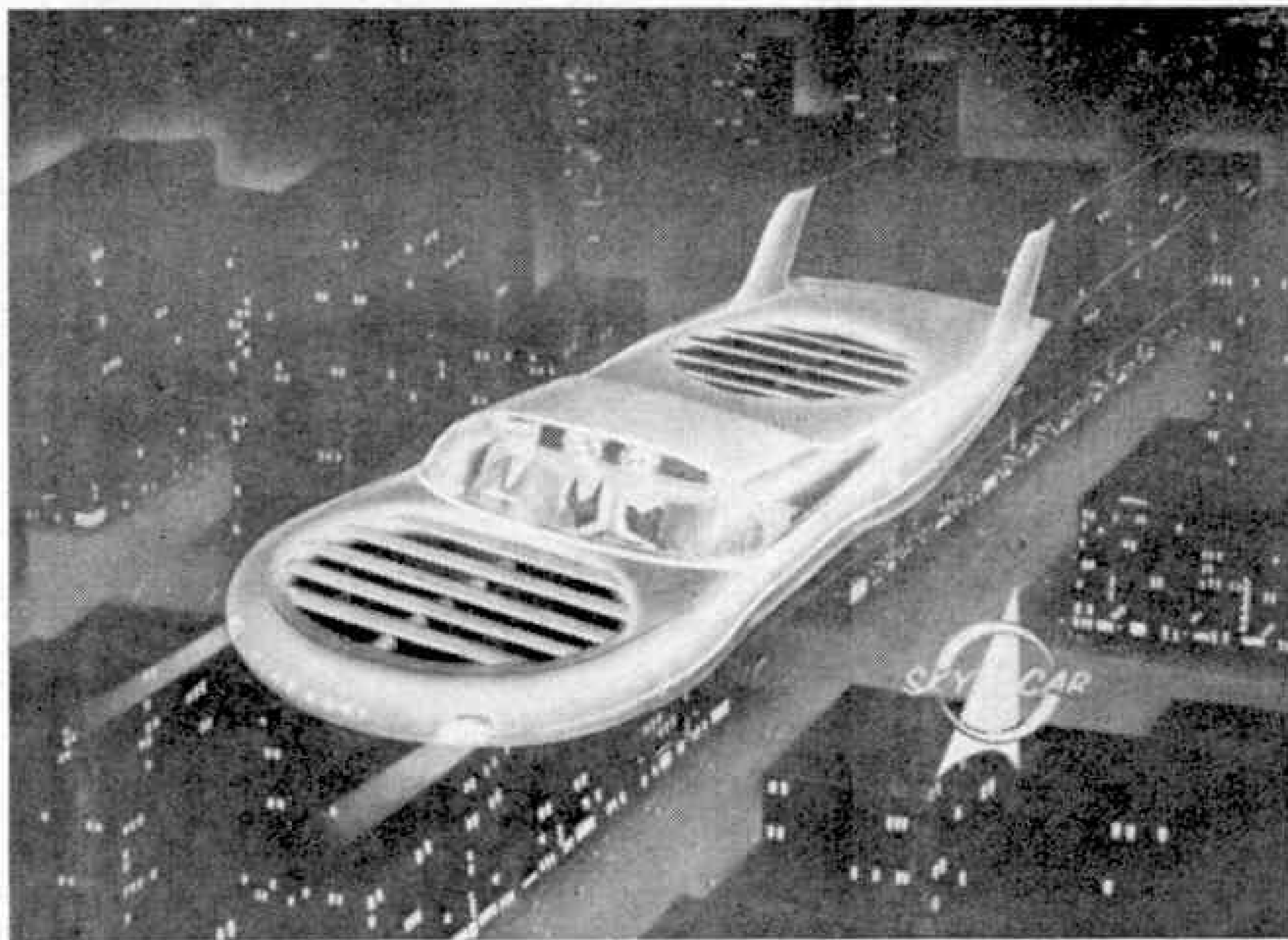
Because of all this, it was fairly obvious that the flying jeeps could not be fitted with ordinary helicopter rotors if they were to be as easy to fly as the U.S. Army demanded. Aerophysics have tried to solve the problem by modifying some ordinary variable-pitch propellers and fitting them in place of more complex rotors. Chrysler and Piasecki have used rotors of simplified design and have mounted movable vanes either above or below them to provide control by changing the direction of the airflow instead of by complicated rotor-blade hinges.

At the moment only the Piasecki VZ-8P has flown, and a glance at the collection of vanes under each of its rotors indicates that the flying jeeps will be neither simple nor cheap to buy, at least for many years.

The vanes are operated by normal helicopter controls in the open cockpit,

and the aircraft is powered by two 180 h.p. Lycoming O-360 engines, driving the rotors through a single gear-box so that either engine can drive both rotors if the other fails. This is important, because it is doubtful if the rotors of the jeeps are big enough to permit an autorotative "freewheel" landing if the power supply to one rotor failed. In any case, the aircraft would then be impossible to control.

The VZ-8P is designed to carry a pilot



What might be one day. An artist's impression of the Piasecki Sky-Car, a four-seat civilian version of the VZ-8P.

and two passengers, all fully-armed, on a platform between the ducts and above the engines. The Chrysler design is very similar, but the four-duct layout of the Aerophysics machine enables the crew to sit one behind the other, with a platform for freight or weapons to the rear. It is powered by a 425 h.p. Turbomeca Artouste shaft-turbine, and in its initial form has only simple guard-rings around its propellers instead of ducts. These give a 4 per cent. increase in efficiency compared with unducted propellers, whilst creating little drag in flight. Their outer halves fold upward to reduce the width of the VZ-7AP when it is carried by another aircraft.

That is about as much as we know yet about these interesting little aircraft, but they open up exciting possibilities for the future because Piasecki are already designing a four-seat civilian version of the VZ-8P, known as the Sky-Car, which will cruise at 150 m.p.h. If it can be made easy to fly and cheap to build, it may be the first real "family car" of the air.



Master of a Coastal Tanker

By Ryan Jefferson

THE tanker's bow slowly comes round, and the stern swings towards the quay. A heaving line has been thrown from the bows, and down aft an Able Seaman is poised with another line, waiting for the stern to close within heaving distance.

The Master waits, watching the closing gap between his ship and the quay. The manoeuvre demands skilful judgment and careful timing. He has brought ships alongside many times before, but the conditions always differ—allowances have to be made for the tide, the wind, and the swell.

"Midships," orders the Master. And he signals "Slow Astern" on the engine room telegraph.

"Wheel's amidships," answers the helmsman. And the engine room order is immediately acknowledged on the telegraph. By going astern, he has taken the way off his ship. Now she is stationary. He rings down "Stop Engines."

The Master notes that both the bow and stern lines have been fed ashore, attached to the ends of the heaving lines, and they are soon secured. He moves the telegraph to "Finished With Engines." And, for the third time in a week, the Master has brought his coastal tanker, the name of which is *Petworth*, alongside the quay to discharge a valuable cargo of oil.

The coastal tanker seen in the picture at the head of the page is "Petworth", a vessel of 1,200 tons, owned by Stephenson Clarke Limited, to whom we are indebted for the illustrations to this article. The author made a trip in the "Petworth" and gives interesting glimpses of life aboard her and of the duties of her master.

His cargo has previously travelled many miles—perhaps starting from an oil field in the Middle East. The first part of the long journey is usually by pipeline, running overland to the sea and connecting the oil field with the cargo tanks of an ocean-going super tanker. These ships bring the crude oil to this country, where it is refined and graded for commercial use. The graded oil then leaves the refineries by road, rail and water for one of the many oil installations which form a network of supply points all over the British Isles, so that the enormous

day-to-day demand for oil products can be met with a speedy and efficient delivery service. These smaller installations hold stocks of oil and run a fleet of

road tankers to supply the commercial needs of the country.

Coastal tankers such as the *Petworth* are used for delivering oil to those installations that are conveniently situated by the sea, or alongside one of the many navigable inland waterways. They are also used for supplying enormous quantities of oil direct to power stations, and for bunkering other vessels.

It is interesting to note that the Master will never see his cargo. In fact, at no time during the long journey from deep down below the earth to the motorist's petrol tank will anyone actually see more than a

minute proportion of the thousands of tons of oil that are imported and consumed every day; the product is always hidden from view inside a tank or a pipeline.

The *Petworth* is one of the latest type of coastal tankers. Her Master was with her when she was completed about a year before I made a voyage in her; he was with her too on her trials; and since then he has run her regularly and continuously, working mainly from the Thames, and delivering to the East and South coasts.

He is well satisfied with his ship. She has all the most modern equipment and the very best in accommodation for officers and crew, each of whom has his own well-furnished cabin. She is about 230 feet long. Most of her hull consists of engine room space and cargo tanks, the four pairs of the latter amidships giving her storage capacity for about 1,000 tons of oil. To discharge the cargo she has two cargo pumps, each capable of delivering at a rate of 150 tons per hour.

Apart from the tanks for oil, there is also storage for ballast, which is additional weight carried to maintain the stability of the ship. A tanker that has fully discharged her cargo rises several feet out of the water, with the result that the vessel becomes less

stable. She is then difficult to handle and tends to be uncomfortable in a rough sea. The ballast tanks are therefore loaded with sea water. In winter, with the greater probability of gales, it is sometimes necessary to pump water into one of the



In the Chart Room of the tanker. On the left is the echo sounder and in the centre the Decca Navigator.

empty cargo tanks in addition to the ballast tank.

The spacious wheelhouse is situated above the boat deck. From this position, the Master can communicate with all the important parts of the ship by means of a talk-back loud speaker system. The wheelhouse is completely enclosed, being three-quarters surrounded by glass. During bad weather, when the sea spray lashes against these windows, one pane of glass can be rotated at high speed in order to ensure a clear view at all times.

At night, the bridge is in complete darkness except for the lights from a steering compass, a helm indicator (showing the angle of the rudder), and an engine tachometer (showing the engine revolutions, which give an indication of the ship's speed). And there is also the radar screen—one of the latest type, which is invaluable in poor visibility. The rotating aerial, situated on a small platform above the bridge, is shown on the radar screen as a rotating beam of light. As this sweeps round the screen it paints dots for each ship



The master of the "Petworth" at work in his cabin.

reflecting the radar beam, and leaves the image of any coast line within a radius of about thirty miles.

Radar also finds navigation buoys, helps to keep the tanker clear of other shipping, and allows her to be taken into a port in conditions when the entrance cannot be seen with the human eye. Since coastal tankers rarely go more than thirty miles from shore, the radar screen can always be consulted as a check on the ship's position relative to the nearest land.

Behind the bridge is the chart room, which is fitted with one of the latest navigation aids—the Decca Navigator, an instrument that receives radio signals from transmitters on shore that allow the ship's position to be pin-pointed to a matter of yards. Also in the chart room is an instrument called an echo-sounder, which measures and records the depth of water by

But the Master's work is not yet completed—he must attend to the business side of his duties. He goes down to his cabin and changes out of his uniform into a suit. He gathers the ship's papers into a briefcase, and then makes his way to the ship's agents. He has many things to do ashore, and only four hours at his disposal, for as soon as the cargo has been discharged, he will be at sea again, returning to the Thames for another cargo.

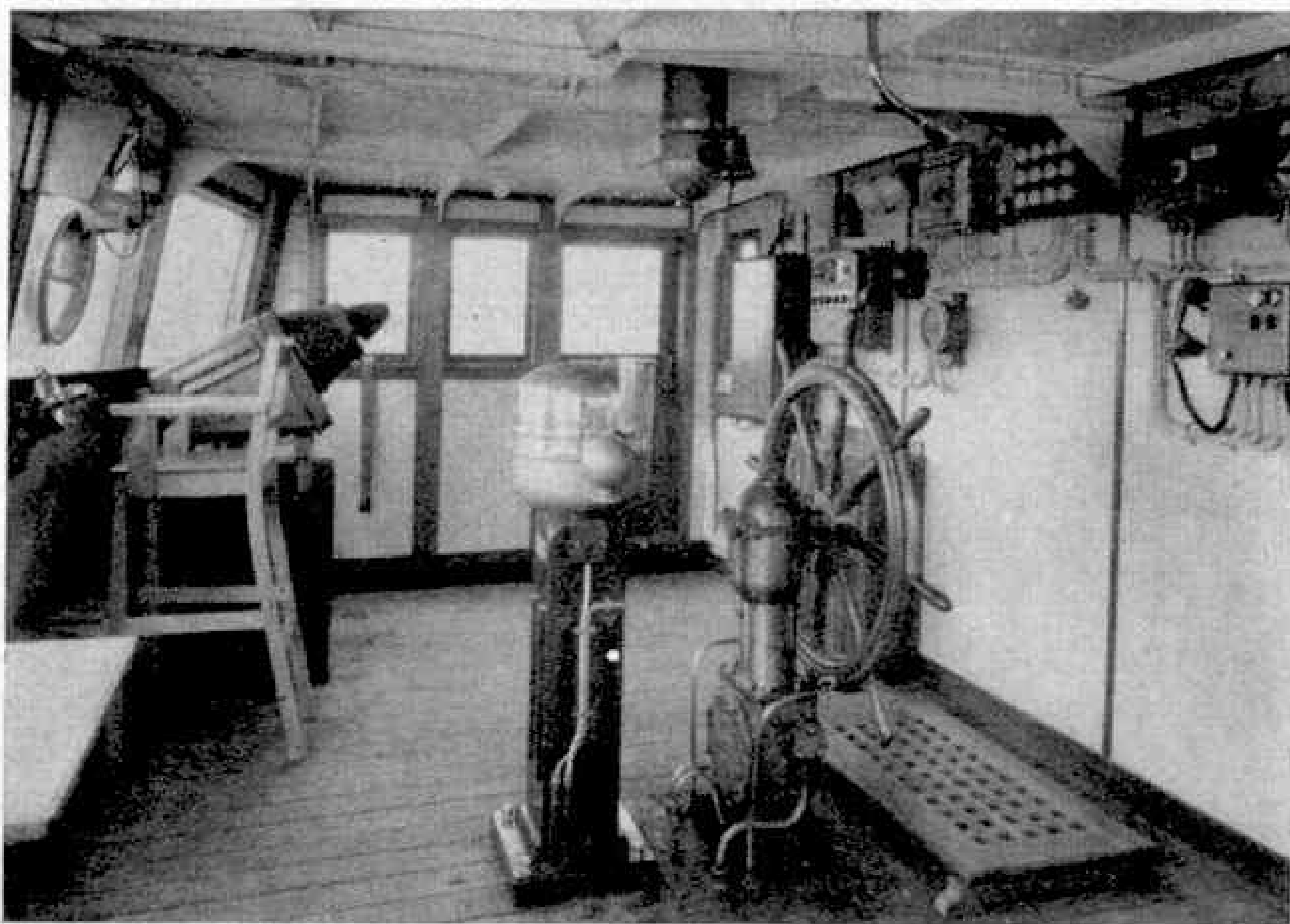
He is well known to the ship's agents, having visited the port many times previously. He has advised them over the radio telephone of his estimated time of arrival, and they are ready for him. First, and perhaps most important of all, he collects the mail and money for the crew's wages. Then he phones the owners for details of future work, collects insurance stamps for the crew, makes arrangements

for repairs and orders stores, water and fuel for his ship as required.

One of his Able Seamen has gone off on sick leave, so the Master signs on a replacement. When this is done, he makes his way to the Customs to present the ship's documents and give details of the cargo. Finally, he fixes a time for boatmen to be alongside to let go his lines when he sails. Sometimes he must also request for a pilot to come on board just before sailing time. In certain ports it is compulsory to take on a pilot before leaving or entering harbour.

There is more work waiting for the Master when he returns, paper work mainly. His day room becomes an office. He writes up the ship's log, checks cargo forms and makes up his Portage Bill, which is a detailed account of wages based on the crew's working time sheets, for in this service, unlike the Royal Navy, both officers and crew are paid according to the number of hours they work.

A Master's duties are extremely varied. He must be a seaman with the full knowledge of all the regulations governing the movement of ships at sea, and with the skill to manoeuvre (Continued on page 320)



On the bridge of the "Petworth". The steering compass is in front of the wheel. On the left of the picture is the radar screen and the clear-view window also is visible.

measuring the time taken for pulses of sound waves sent down to the bed of the sea to bounce back again. Also behind the bridge is the wireless room, fitted with radio-telephone equipment which can be used, for example, to communicate with other ships or perhaps to ring up the London owners via the coastal radio stations through the G.P.O. telephone system for details of the next cargo.

But let us see what is happening now. The Master notes that the Chief Officer is already organising the coupling of the discharge pipelines, and in about four hours they will have delivered the cargo.

MECCANO MAGAZINE

Junior Section

Brook and Lane In One

The boy riding the bicycle in the accompanying picture is not behaving recklessly. He is on a real road, on a three-quarter mile section of it that is also a stream.

This curious road combination of brook and lane is to be found south west of the village of Nurton, which is about five miles from Wolverhampton, on the way to Bridgnorth. The stream bed is very rough, and the reader who sent me the picture, B. I. Sproson, Wolverhampton, tells me that he can speak from experience when he says that cycling down it is no easy matter. While he and a friend were riding over this stretch of "waterway" they encountered first a tractor and then a car, and had to dismount and climb on to the bank to avoid being drenched.

A Midget Tramcar

Here is a touch of summer, and I hope that this year all of you on holiday at the seaside or elsewhere will enjoy the bright and fine weather that is suggested by the

lower picture on this page. It came from P. L. Lynch, Nottingham, and shows one of the small tramcars to be seen at Eastbourne. This belongs to Modern



Electric Tramways Ltd., who operate a narrow gauge system on part of Eastbourne's long sea front.

The tramway has been in operation about 10 years. It started when the present managing director and chief engineer of the Company decided to build a narrow gauge tramway for his own amusement, the result of which was a beautiful 15 in. gauge double decker, modelled on one then in service between Llandudno and Colwyn Bay, in North Wales. Other cars are now in use on the system, which has become very popular with visitors and useful also to residents.

All the trams operating at Eastbourne were built at Barnet, the latest additions to the fleet being Nos. 6 and 7, the latter of which is the tram illustrated.



Easy Model-Building

"Spanner's" Special Section for Juniors

High Chair—Beam Bridge

The High Chair shown in Fig. 1 is designed for very young model-builders and will provide them with a good exercise in the use of various Meccano constructional parts.

The seat of the Chair is a Flat Trunnion. A bolt fixes the Flat Trunnion to two Trunnions 1 and 2 whose flanges are the arms of the chair, and two Double Bent Strips 3. Two $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips that form the legs are bolted through their upper lugs to the lugs of the Double Bent Strips and a Curved Stepped Strip 4 is bolted to each lower lug of the $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips. Four bolts are screwed into the end holes of the Curved Strips to ensure that the chair will not wobble. A foot rest is provided by a $1\frac{1}{2}"$ Strip that is bolted to a Reversed Angle Bracket 5.

The chair back is a Flat Trunnion to which is bolted a $2\frac{1}{2}"$ Strip on each side. The $2\frac{1}{2}"$ Strips are bolted to Angle Brackets which are in turn bolted to the flanges of the Trunnions 1 and 2. The table consists of two 1" Corner Brackets bolted together and a $1\frac{1}{2}"$ Strip. The $1\frac{1}{2}"$ Strip is attached to the Corner Brackets by a Fishplate held by Bolts 6 and 7. The table is fixed to each side by an Angle Bracket and a Fishplate. A list of the parts required to build the High Chair is given at the end of this article.

The construction of the Beam Bridge in Figs. 2 and 3 is commenced by constructing the base and the tower. A $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate has two Trunnions 1 and 2 bolted to it and a $2\frac{1}{2}"$ Strip 3 is bolted to the centre hole of the flanges of each of the Trunnions and two $5\frac{1}{2}"$ Strips are bolted

one on each side of the $2\frac{1}{2}"$ Strip. A Flat Trunnion is fixed in place at the top of each side of the tower. A $12\frac{1}{2}"$ Strip 4 is lock-nutted to each of the Flat Trunnions, the inner nuts securing a $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip 5.

One parapet of the bridge roadway is made of two $5\frac{1}{2}"$ Strips that are overlapped five holes and the other consists of four $2\frac{1}{2}"$ Strips bolted together to form an $8\frac{1}{2}"$ built-up strip. The roadway consists of

two $5\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plates held by Angle Brackets, and two Fishplates bolted to the inner ends of the sides of the bridge are mounted on a $3\frac{1}{2}"$ Rod 6 that is journaled in the $2\frac{1}{2}"$ Strip 3 of the tower. A $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip 7 is bolted to the roadway as shown and on each side the lower of two $2\frac{1}{2}"$ Stepped Curved Strips bolted together is fixed by lock-nuts to the lugs of

the Double Angle Strip. The

upper ends of the Stepped Curved Strips are pivoted on a $3\frac{1}{2}"$ Rod 8, that is passed through the end holes of the $12\frac{1}{2}"$ Strips. Two 1" Pulleys keep the Curved Strips in place.

Two Road Wheels that form counter weights for the bridge are fixed on the ends of a further $3\frac{1}{2}"$ Rod 9, to which a length of Cord is attached. The other end of the

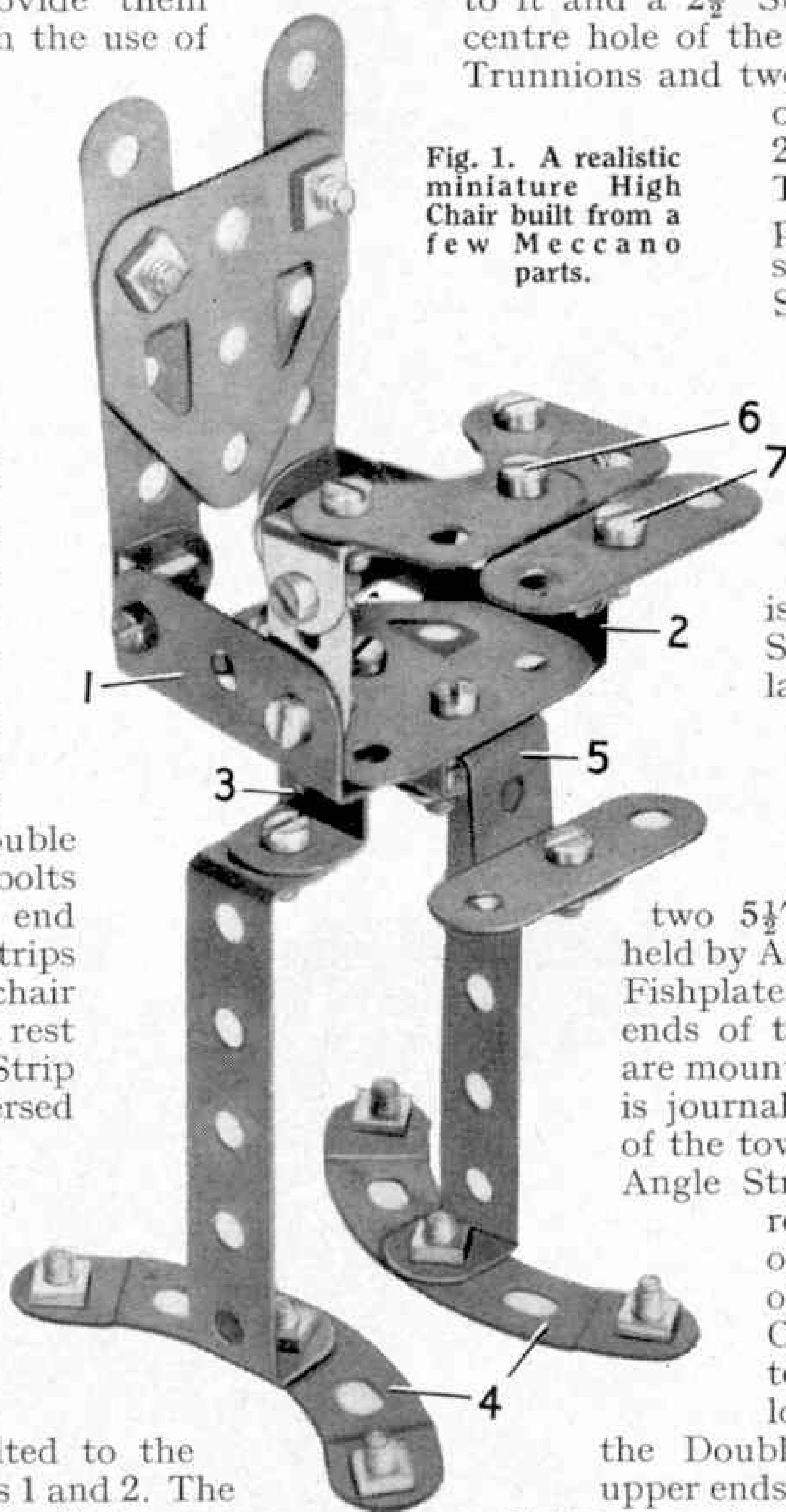
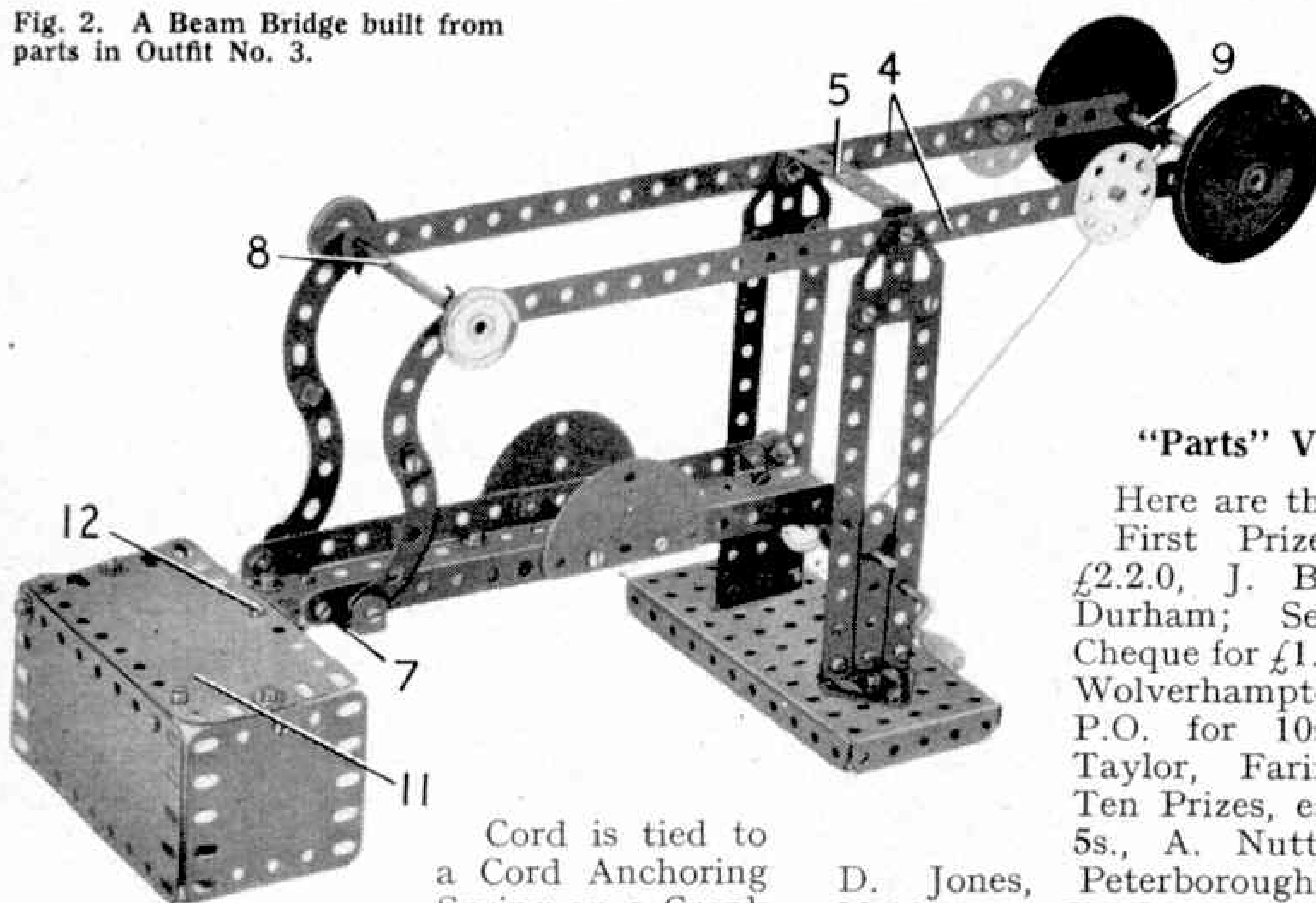


Fig. 1. A realistic miniature High Chair built from a few Meccano parts.

Fig. 2. A Beam Bridge built from parts in Outfit No. 3.



Cord is tied to a Cord Anchoring Spring on a Crank Handle 10.

The landing platform 11 consists of two $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates for the ends and a $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate for one side. The top of it is a $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate to which a $2\frac{1}{2}''$ Strip and a Double Bracket are bolted, these being held by Bolt 12. The end of the $2\frac{1}{2}''$ Strip projects $\frac{1}{2}''$ to form a support for the roadway when lowered. A further $2\frac{1}{2}''$ Strip bolted to the Double Bracket vertically forms a leg to support the top $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate at the front.

Parts required to build the Beam Bridge:—2 of No. 1; 6 of No. 2; 8 of No. 5; 2 of No. 10; 1 of No. 11; 8 of No. 12; 3 of No. 16; 1 of No. 19g; 4 of No. 22; 2 of No. 24a; 6 of No. 35; 56 of No. 37a; 48 of No. 37b; 10 of No. 38; 1 of No. 40; 2 of No. 48a; 1 of No. 52; 4 of No. 90a; 2 of No. 126; 2 of No. 126a; 1 of No. 176; 2 of No. 187; 2 of No. 189; 2 of No. 190; 2 of No. 191; 2 of No. 214.

Parts required to build the Baby's High Chair:—2 of No. 5; 2 of No. 6a; 3 of No. 10; 4 of No. 12; 25 of No. 37a; 25 of No. 37b; 1 of No. 45; 2 of No. 48a; 2 of No. 90a; 1 of No. 125; 2 of No. 126; 2 of No. 126a; 2 of No. 133a.

"Parts" Voting Contest

Here are the results:

First Prize:—Cheque for £2.2.0, J. B. Forster, Co. Durham; Second Prize:—Cheque for £1.1.0, C. C. Jones, Wolverhampton; Third Prize: P.O. for 10s. 6d., B. E. Taylor, Faringdon, Berks.; Ten Prizes, each of P.O. for 5s., A. Nuttall, Middleton;

D. Jones, Peterborough; D. Savage, Maidstone; J. Cooper, Stratford, E.15; P. B. Thomas, Huyton, nr. Liverpool; S. Ingham, Nelson, Lancs.; B. Stuart, Bangor, N. Wales; F. J. McLernon, Co. Derry, N. Ireland; A. Morrogh, Shankill, Co. Dublin; J. B. Pailing, Ledbury, Herefordshire.

The result of the voting was as follows:—

- (1) Fishplate
- (2) Collar
- (3) 1" Pulley with boss
- (4) Bush Wheel

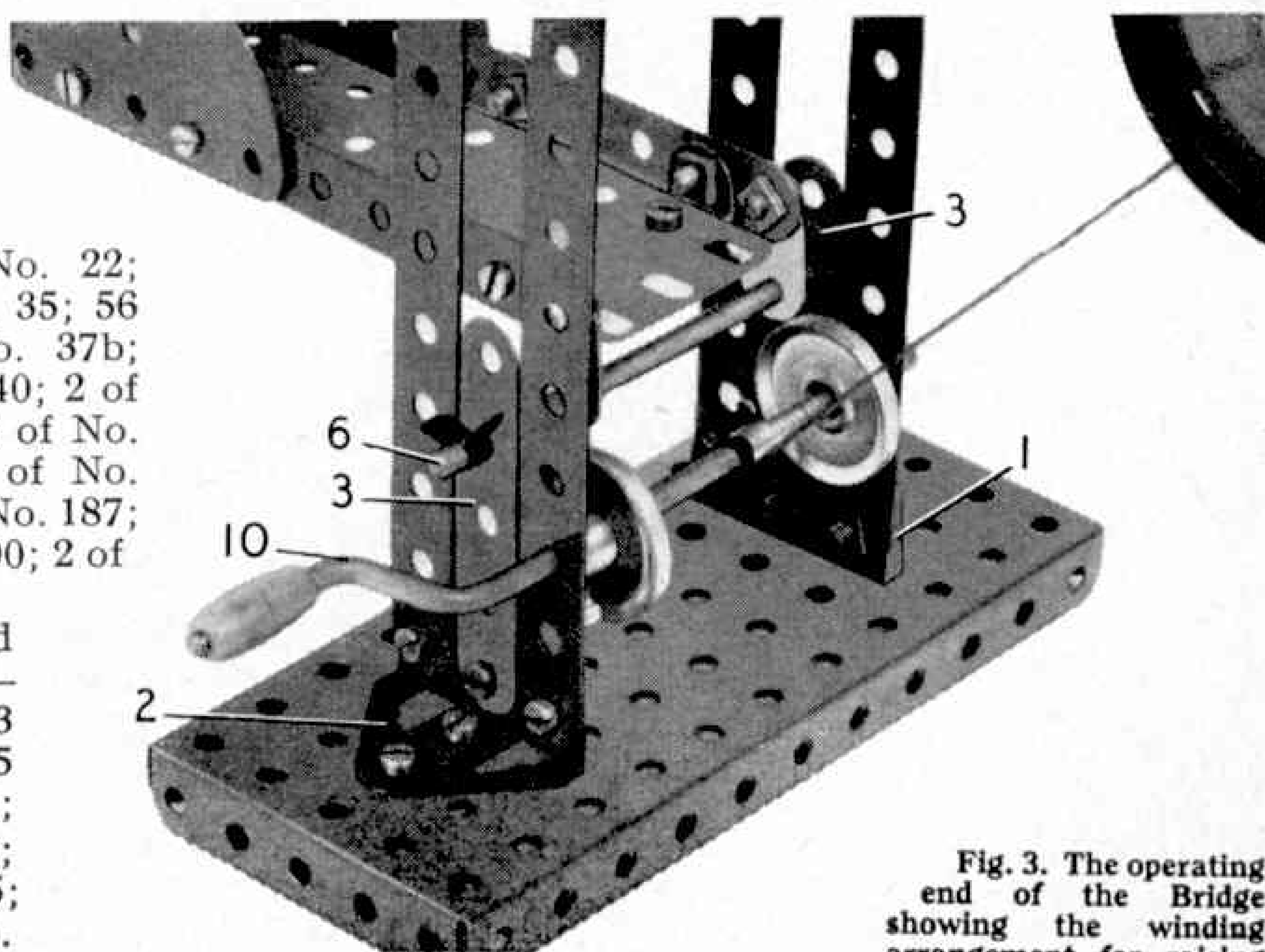


Fig. 3. The operating end of the Bridge showing the winding arrangement for raising and lowering the span.



DINKY TOYS NEWS

By **THE TOYMAN**

EVERYBODY turns to look whenever one of the low-loaders specially designed for transporting very bulky and heavy loads comes slowly along a road. On the low platforms of such vehicles we see such things as giant transformers, ships' propellers and large castings, to name only a few. It is a vehicle of this kind that forms the subject of the splendid new Dinky Supertoys No. 986, the Mighty Antar Low Loader, that has appeared this month.

This fine model is seen in the lower illustration on this page and its unusual character is bound to appeal to collectors. It is hauled by a Thorneycroft Mighty Antar Tractor unit, to which it is articulated, and the model is complete with an attractive load consisting of a beautifully moulded ship's propeller. The Mighty Antar Low Loader is finished in very striking colours, red and grey, and its 10 wheels have black tyres.

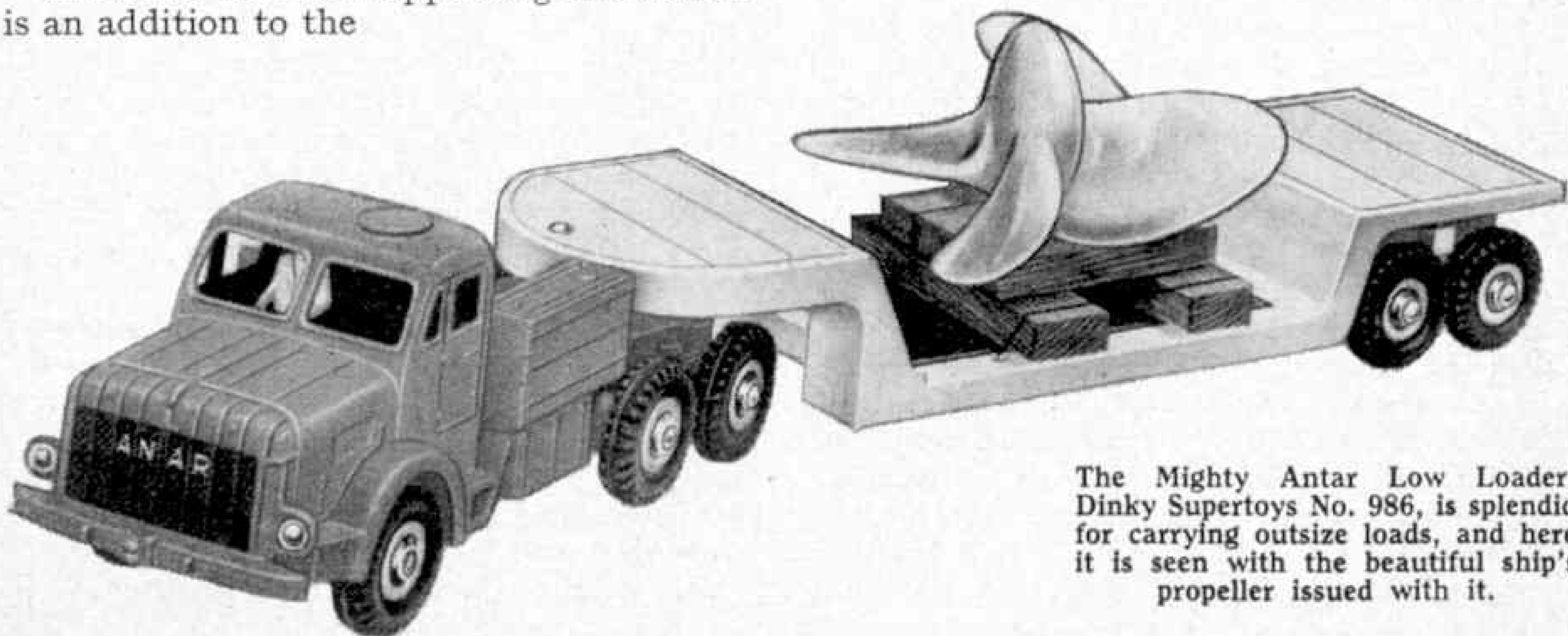
The other new item appearing this month is an addition to the



David Willets, Brierley Hill, a Dinky Toys collector since he was three years of age, can now recognise almost any car he sees on the road.

Dublo Dinky Toys range in the form of a miniature Bedford Articulated Flat Truck, No. 072. As their name indicates, Dublo Dinky Toys are made to the same scale as Hornby-Dublo Trains, so they are just the thing for helping to give extra life to a Gauge 00 railway. Further details of this addition to the range are given in the Hornby-Dublo pages in this issue, where there are pictures of model railway scenes in which it appears.

I now want to say a few words about the striking model of the B.B.C. Roving Eye which made its appearance last month, and the Triumph Herald, the Dinky Toys car that made Dinky Toys history by appearing in the shops almost simultaneously with the announcement of the actual car by the manufacturers, the Standard Motor Company Ltd. This month I have two pictures in which you can see the Triumph Herald, which is listed as Dinky Toys



The Mighty Antar Low Loader, Dinky Supertoys No. 986, is splendid for carrying outside loads, and here it is seen with the beautiful ship's propeller issued with it.

No. 189, and the fact that it is a completely up-to-date reproduction of one of the latest cars to leave the maker's works has resulted in a terrific demand for it from Dinky Toys enthusiasts, all of whom are anxious to have it in their collections as soon as possible.

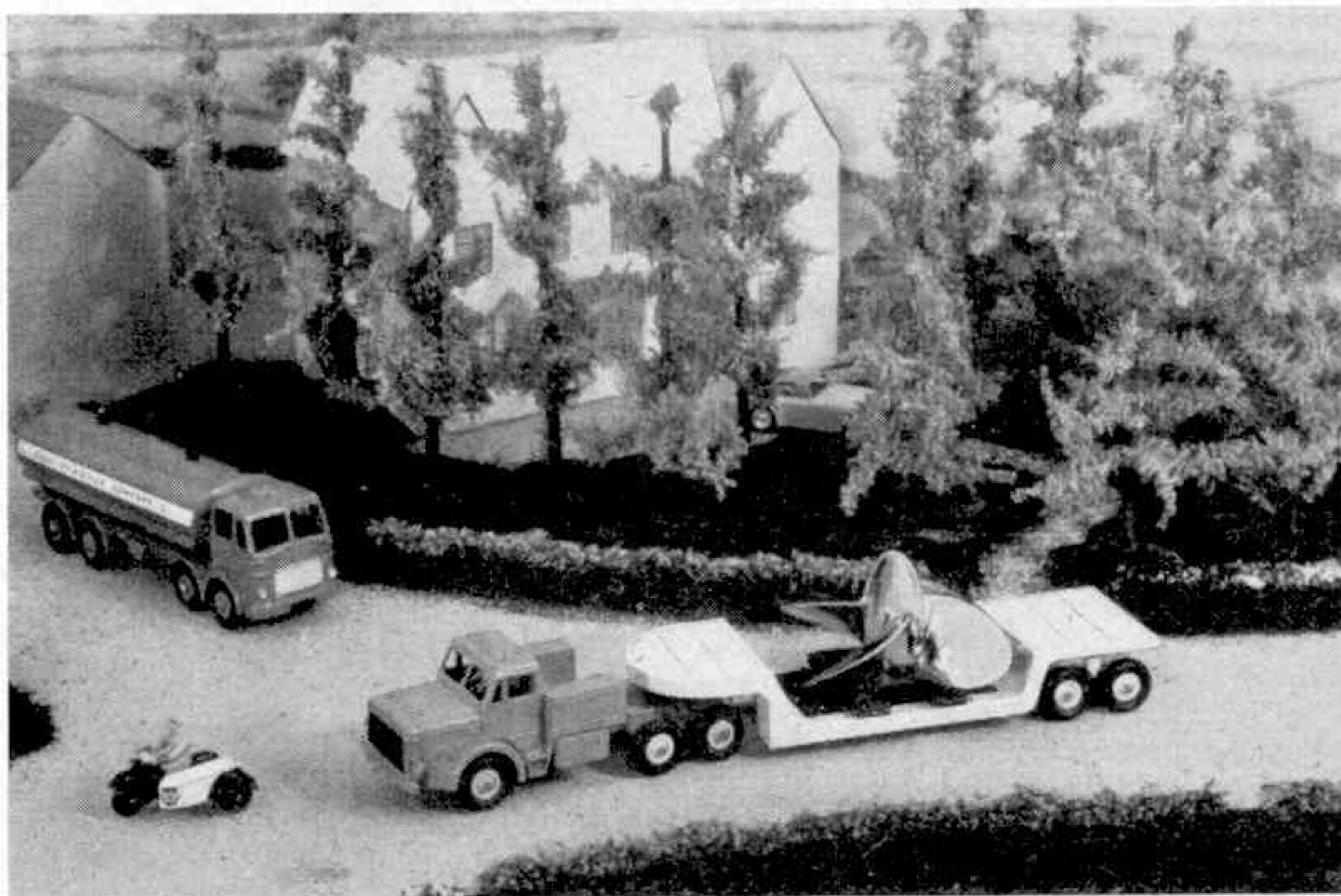
The actual Triumph Herald is a four cylinder 948 c.c. model rated at 9.9 h.p. and it is available either as a two-door four-seater saloon or a two-seater coupé. The body shows Italian influence in styling and was the work of Giovanni Michelotti.

One of the main features of the Triumph Herald is that it has independent suspension on all four wheels. Another unusual and very important point is that the body is

splendid new feature just introduced with the Dinky Toys Rolls Royce, and follows the general outline of the prototype with a remarkable degree of accuracy.

The Dinky Toys model of the B.B.C. Roving Eye is seen in the upper picture on page 297, where it is shown at a race meeting transmitting an "on the spot" outside broadcast. I am sure you will find many such opportunities for using it and it will give you a lot of fun besides the pleasure that comes from owning such a magnificent model.

The B.B.C. introduced the Roving Eye vehicle in 1953-4, and all the experience accumulated since that time has been embodied in the Roving Eye II, which



The Dinky Supertoys Mighty Antar Low Loader on the road, where its passage with an unusual load always attracts special attention.

mounted on a separate chassis, with box section side members to ensure rigidity. It is the first British family car produced for some years that has a chassis of this type. Further, in designing the car every possible attention has been given to questions of safety. The braking system is claimed to be the most efficient produced by the Company for a passenger car. The steering gives the very small turning circle of 25 ft., and the steering wheel is collapsible.

The Dinky Toys model of the Triumph Herald is available in green and white or in pale blue and white, with aluminium finished radiator and turned aluminium wheel hubs. It too has independent suspension on all of its four wheels, that

forms the prototype of the Dinky Toys model. It is a completely self-contained television mobile control room, which can go rapidly to the site required, such as a football match or a race meeting, remain for a short time to do a broadcast, and then move on elsewhere. It plays a big part in such B.B.C. programmes as Sportsview and Panorama.

In addition to all its complicated ancillary equipment, such as V.H.F. sound and vision transmitters, picture monitors, control panels and petrol-electric generator sets for supplying current, etc. the vehicle carries two television cameras. One of these is mounted on a camera lift that projects the camera through a circular opening in the



The Dinky Supertoys B.B.C. T.V. Roving Eye at work at a race meeting.

vehicle roof. When in the raised position the camera is well clear of the roof of the vehicle, while in the down position it is about 3 ft. above floor level and so is conveniently placed for servicing. The camera is so mounted that it can be swivelled through a full circle, and both

cameras can be operated whether the vehicle is in motion or stationary.

The second camera is placed over the near side front wheel box, where it can get a direct view forward through the windscreen, or at right-angles to take kerb-side interview shots, for which purpose



The Dinky Toys Triumph Herald brings a new look to our miniature roads.

The real Triumph Herald, on which Dinky Toys No. 189 is based, is remarkable for its wealth of modern motoring features.



the near side window drops clear. Both cameras are readily removable for use remote from the van.

The Roving Eye has a rotatable 45 ft. telescopic mast with the vision aerial carried on a short vertical extension, and when it is erected the vehicle is stabilised by means of hydraulic outrigger jacks fitted to girder cross members, which are welded to the chassis behind the front and rear wheels.

The Dinky Toys model of the Roving Eye is scaled from the original and is finely detailed. It has transparent windows in the cab and opaque green windows in the body. The camera and its operator are mounted on a turntable on the roof, and the model itself is finished in correct B.B.C. dark green enamel. A plastic mast carrying the aerial is mounted in a socket on the vehicle and is removable.

And now for some news of the Dinky Toys Club. You have probably heard that in some areas several members living within easy reach of each other have got together and formed their own friendly little local clubs. Most of them meet at each other's homes, either at regular intervals or at such times and as often as they find convenient, but others are more fortunate and can use rooms that they can devote to club affairs. Each member brings along a few of his favourite Dinky Toys, or perhaps his most recent acquisitions, and together

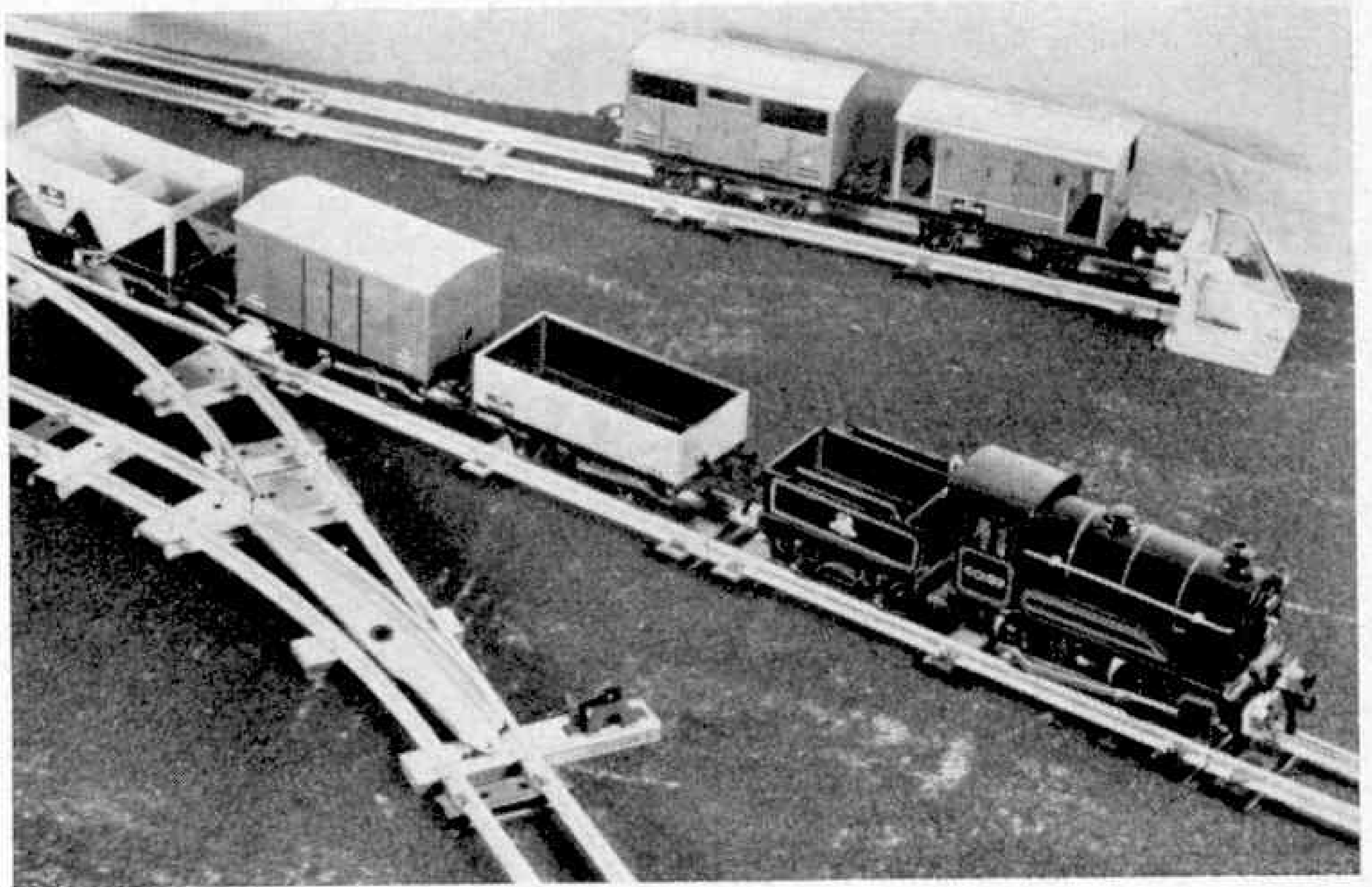
they arrange various play schemes, make up scenic layouts and perhaps top off the meeting with friendly discussions about each other's collections.

One outcome of most of these local club gatherings is that I receive regular lists of suggestions for new items that the members wish to see included in the Dinky Toys range. The more of these the merrier! And in fact there are more, for enthusiasts who cannot join a local group of collectors also write to me, and their letters too are welcome, as are photographs of layouts and of their owners with them.

Any reader who would like to start such a group in his own immediate area should ask his friends to join him. He should also write to tell me of his hopes, as I intend to include on these pages the names and addresses of those wishing to form clubs, which would help to attract new members. I intend to make this a special feature in future, as I feel sure there must be hundreds of Dinky Toys collectors and Club members living near to each other who would be only too pleased to meet and share in the fun of their hobby.

But keep one important point in mind. This is that you must be sure of the support of your parents if you are to meet at your home. I think they would enjoy the prospect of a Dinky Toys Club if this is at all possible—and they would certainly be valuable members!

"Tommy
Dodd"
writes
about:



Railways out of Doors

AS promised recently, our talk this month takes us out of doors, as a pleasant seasonal change from the usual indoor situation of a Hornby layout. Given the right conditions, Hornby railwaying outside can be really good fun, as I expect that many of you have already found. It is therefore scarcely necessary to tell you that a dry and warm day is essential if you are really to enjoy outdoor operations.

Not all of us can hope to have such a fine level site for the track as that shown in the upper illustration on the next page. This shows part of the layout of M.M. reader J. Parker, of Salisbury, Southern Rhodesia, who has taken full advantage of the wide, open space evident in the picture to put down an extensive and realistic system. This is not a permanent affair of course, as Hornby railway material is designed for indoor use and in most countries would be affected by the weather, if left out permanently. To be safe, a Hornby layout outside has to be put down each time it is to be used, and when operations are over all components should be wiped over before being put away in

Laying a Hornby Railway in the open air in good weather and running your trains on it, is good fun. This article gives useful hints on the practice. In some instances this provides fine opportunities for civil engineering work in which the Hornby No. 50 Hopper Wagon seen in the train in the picture at the head of the page can do useful work.

case there is any trace of damp on them.

An outdoor site sometimes provides the opportunity for some civil engineering work, but when thinking about anything of this kind you must carefully consider the general situation and—most important this—obtain permission for any earth-moving operations and so on that may suggest themselves to you. Our reader in Salisbury is fortunate in this respect.

In the background of the picture you will notice the tunnel that has been built up with the aid of a few bricks. Evidently this was only a trial effort, as the Engineer concerned, in forwarding the photograph of this part of this railway, reports that this tunnel no longer exists. Instead he has built a new and more realistic one in a different place.

A description of the way in which the second effort was built will show how easy it is to have a tunnel. First of all a hole was excavated long enough and deep enough to take four bricks laid edge-on to make a suitable base for the tunnel. The bore of the tunnel is actually a tinplate tube set in cement laid over the foundation of bricks.

Levels are arranged so that a shallow floor of cement is laid inside the tube to take the rails at their normal level. The final operation, before the rails were laid, of course, was to build up the tunnel ends, again using cement. So there you are, and if you build one like it you can easily make it more ornamental if you wish.

Even if actual work of this kind is not possible, reference to it suggests the running of various types of vehicles that are used in connection with such operations in real practice. Tipping and Hopper Wagons in the Hornby system are just the thing for bringing up material and that is why there is a Hornby No. 50 Hopper Wagon in the train shown in the illustration at the head of these two pages. As its name implies, the body of the Hopper Wagon is specially shaped and has bottom doors, which are arranged so that the load can be discharged beneath the vehicle and between the rails.

Those of you who have your railways all complete on a baseboard, possibly in sections if the system is fairly big, will be able to transport the complete outfit into the garden in quick time for a spell of outdoor running. There will be no particular problems for you, except that you will have to watch the levels when placing your baseboard sections in position. A nice smooth lawn forms an obvious site for the

line. But don't forget to obtain permission to put your rails down there, and see that the grass is cut quite short.

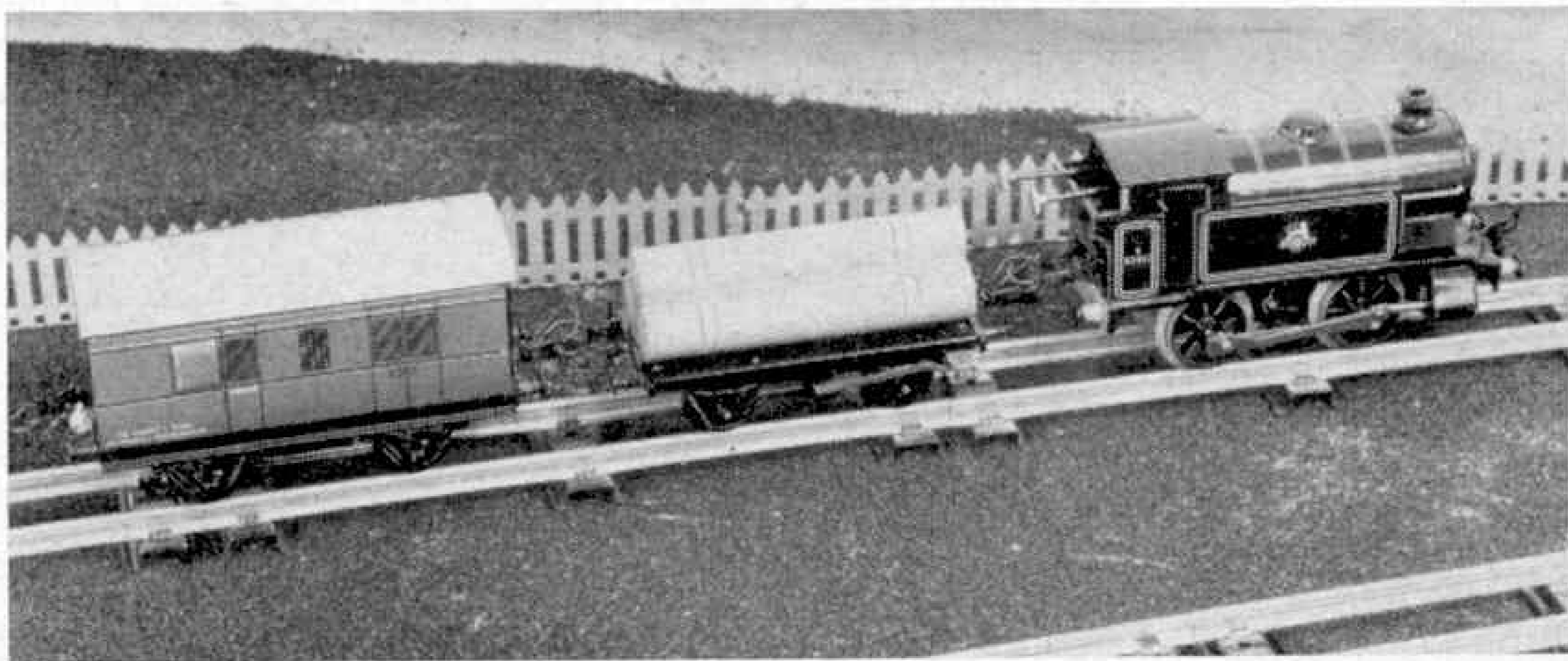
Remember also that in such circumstances the use of Rail Connecting Plates to secure your rails together is essential if good running is to be obtained.



An outdoor scene showing the Hornby railway of "M.M." reader J. Parker, Salisbury, S. Rhodesia. The tunnel in the background has recently been removed.

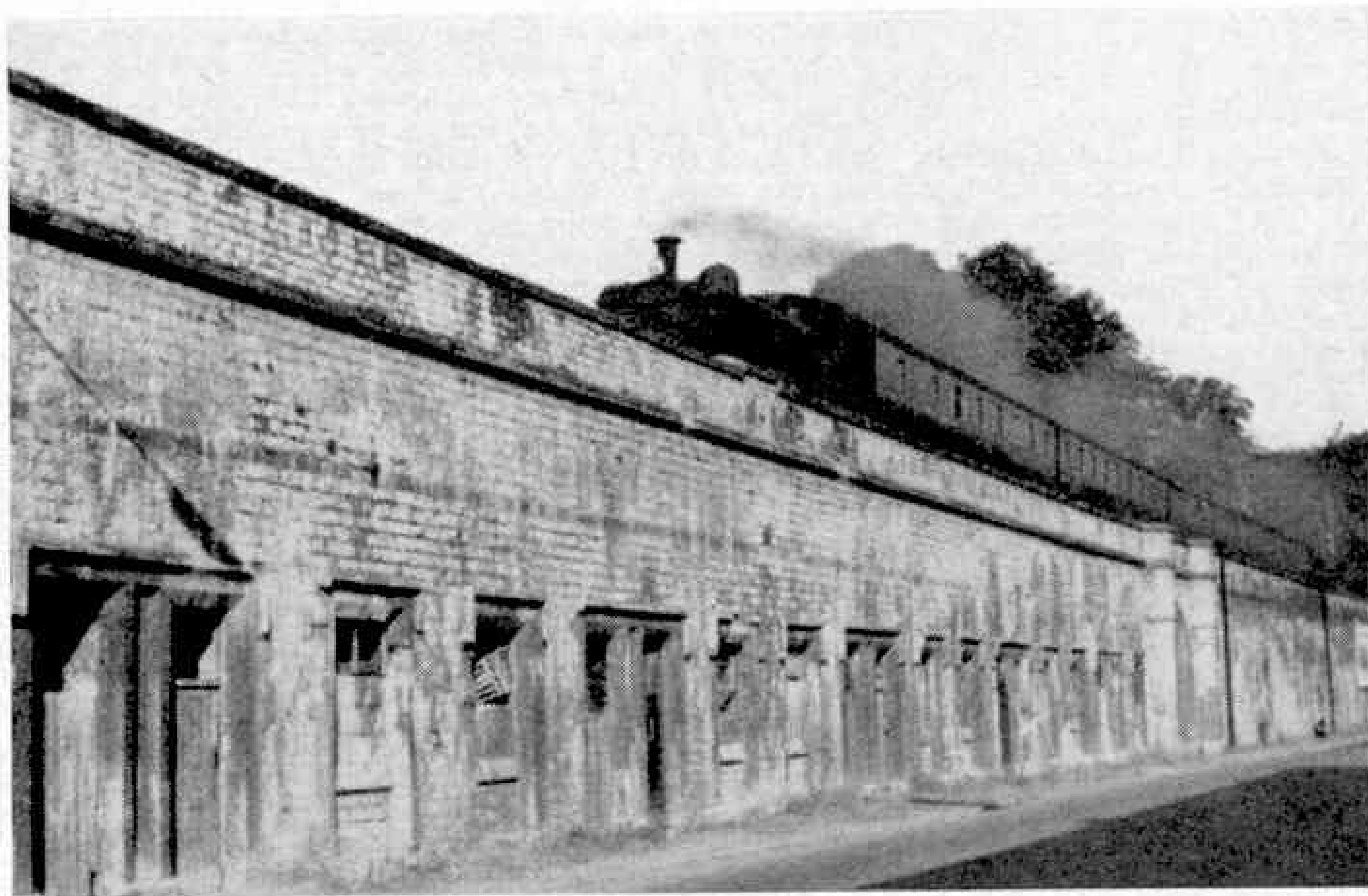
Not all of us can fasten down our tinsplate track in the manner described by Mr. S. Hall, of Wanstead Park. His railway too is a mobile one and when the rails are used out of doors they are literally nailed to the ground, with $2\frac{1}{2}$ in. wire nails passing through the holes in the sleepers!

This is the first time I have heard of Hornby track being spiked down in this way. I am sure that it is effective. The nail holes do not really damage the lawn.



Here is an odd short train including the Hornby No. 50 Gas Cylinder Wagon, an attractive and unusual vehicle.

Of General Interest



THE picture above shows part of Twerton viaduct, $1\frac{1}{2}$ miles west of Bath, with what is unmistakably a Western Region tank locomotive hauling a train over it. Some of the twenty-eight arches of this structure were built as cottages, but it was soon found that vibration caused by the passage of trains made them quite unsuitable for habitation.

In Bath itself there is an arch under the railway where police and fire brigade headquarters were situated until fairly recently, and under other arches there was an infants' school a century ago, but no trace of this remains.

It is interesting to recall that in one of the first schemes for linking Bath and Bristol by rail viaducts were envisaged instead of embankments, as they would take up less ground and would give shelter to cattle. The picture, and these notes,

were sent in by Colin G. Maggs, who lives in Bath.

The lower picture, which is from a photograph by Ron Carey, Southampton, shows another relic, this time in the heart of the New Forest. It is a brick and cobblestone chimney, all that remains of a cottage used during the 1914-8 war by woodmen from Newfoundland, who came over to help with

forestry work in this country.

To reach it the route from Lyndhurst to Emery Down should be followed; the chimney itself is on the left-hand side of the road, just after crossing a small stream.

Note—Never light fires in the New Forest except by special permission.



Air News

By

John W. R. Taylor

Red Wings for B.E.A.

British European Airways' Comet 4B and Vanguard air liners will add a vivid splash of colour to the parking apron at London Airport when they enter service next year. As a contribution to safety, by making the aircraft more eye-catching in the air, the entire top and bottom wing surfaces will be painted a bright red. The tail will also be made to stand out by displaying a large red B.E.A. square on the white fin.

The fuselage will retain its white roof, but will introduce a new broad black stripe, the depth of the cabin windows, running from nose to tail.

Hunting-Clan Air Transport also have decided upon a striking colour scheme, as mentioned in last month's *Air News*. It seems certain that other airlines will take up the idea, because the wings of modern air liners are manufactured by a machining process that makes it essential to paint them for protection against corrosion. Bright colours can be used just as easily as grey or white.

Saro Saucer

By the time this issue of the *M.M.* appears, Saunders-Roe should have flown the prototype of a revolutionary craft that is a cross between a ship and an aeroplane. Somewhat similar to the U.S. flying jeeps described on pages 286-8, it consists of a simple test vehicle, said to be shaped like a flying saucer and designed to skim over the surface of the sea on a cushion of air.

A much larger version of the craft should have a tremendous future as a cross-Channel ferry for cars and passengers, except when the sea is rough.

Aircraft and Jam

Few people realise that the jam-making industry plays a big part in airline operations, beyond the mere supplying of tiny pots of jam for the tea and breakfast trays served to passengers.

Sabena, for example, buy from the jam makers every year many thousands of plum stones, which are pounded and used for cleaning parts of the piston engines of their air liners. When the company gets the first of its five Boeing 707 jets at the end of this year,

it will order supplies of apricot stones as well. After being pounded and mixed with chemicals, these will be sucked into the 707's jet engines, to clean the turbine and compressor blades on the way through.

Air Mail by Rockets

Although the Chance Vought Regulus II will not now be used by the U.S. Navy as a submarine-launched "flying bomb", it may enter service with—surprisingly—the U.S. Post Office. Flight trials of the 1,300 m.p.h. missile have shown that it can be guided with great accuracy, and test versions with a retractable undercarriage have been landed safely many times at the end of their flights.

It is now suggested that Regulus II should be flown experimentally between U.S. cities, carrying mail instead of a nuclear warhead. The idea is not so far-fetched as it might seem, because the first Regulus II fired from the U.S. submarine *Grayback* last September carried letters from Admiral Jack P. Monroe, commander of the Pacific Missile Range, to military and government leaders including President Eisenhower. After the missile had been brought down at Edwards Air Force Base, California, the letters were retrieved from its nose and sent on to their destinations by more conventional means.



New Zealand leads the world in aerial farming. This picture shows a de Havilland (Canada) Beaver of Rural Aviation Ltd., New Zealand, being loaded with fertiliser, for spreading over barren hill country near Wellington. The fertiliser will be discharged from a hopper inside the cabin and will help to make the land suitable as pasture for sheep and cattle. Illustration by courtesy of the High Commissioner for New Zealand.

Music While You Fly

All the DC-7B and Viscount air liners of South African Airways are being equipped with special tape recorders, from which music, plays and other programmes of general interest and entertainment will be broadcast during flight. However, passengers will not have to listen whether they want to or not, because they will only be able to hear the programmes if they wear the earphones that will be provided by each seat.

* * * *

The Gyrodyne company is developing small pilotless helicopters which will be carried by U.S. Navy destroyers for protection against enemy submarines. The Navy will rely upon the destroyers' detection gear to find the submarines and will then launch the helicopters, carrying small torpedoes, to compensate for the World War II ships' lack of speed compared with that of a nuclear submarine. Designations of the helicopters now under test are the single-engined DSN-1 and twin-engined DSN-2.

This picture gives some idea of the severity of the low temperature tests to which the English Electric Thunderbird anti-aircraft missile has been subjected.

Chilly Missile

Like aeroplanes, guided missiles are of little use unless they can be fired in all weathers, in any part of the world, and the upper illustration on this page shows the sort of test to which the English Electric Thunderbird surface-to-air anti-aircraft missile has been subjected to prove that it will meet this requirement.

Dust, as fine as flour and mixed with sand, was sprayed over the weapon and its launcher for half-an-hour, after which an inspection was made to ensure that no dust had found its way inside to damage the delicate guidance and control equipment. Heavy rainstorms were then simulated by water sprays, some containing salt to prove that Thunderbird would be unaffected by having to stand ready for action on its launcher for long periods near the coast.

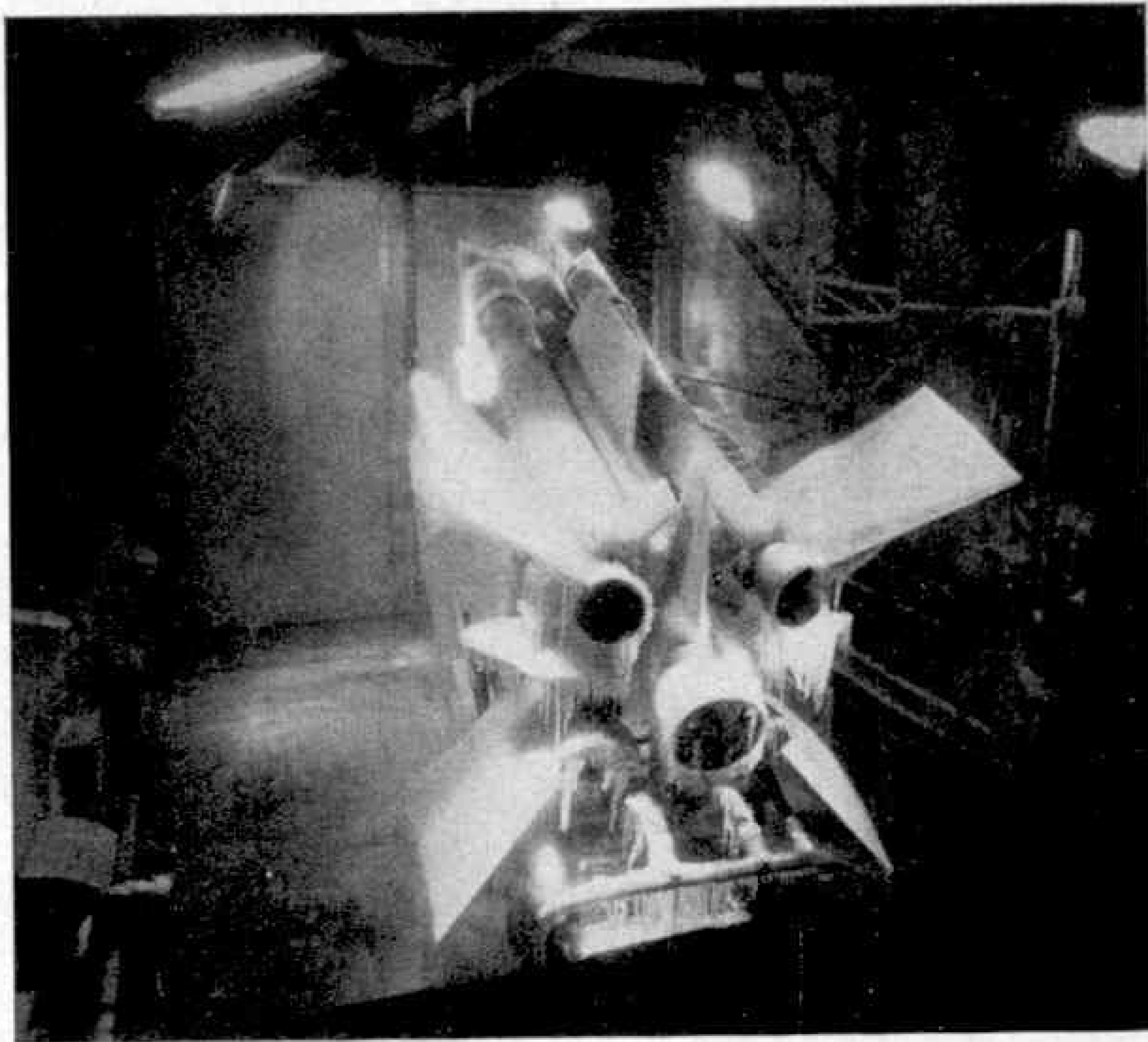
Finally came the freezing test, which is illustrated. This lasted 14 days, during which the missile was kept at -20 deg. C., and all its working parts were tested every day. It emerged with flying colours and, after its current acceptance trials, is expected to enter service this year with the Army.

Over 1,000 m.p.h. for 62 Miles

Piloted by Andre Turcat, the remarkable French Nord Griffon II research aircraft, illustrated below, set up a new world speed record over a 100 km. (62-mile) circuit on 25th February this year, at an average of 1,018 m.p.h. The previous record of 727 m.p.h. was held by a Douglas Skyraider fighter.

Even this does not represent anything like the top speed of the Griffon II, which has accelerated while climbing at more than twice the speed of sound (1,320 m.p.h.) at 61,000 ft. Its fine performance results from the use of a unique power plant, in which the entire fuselage forms a shell around a 54-in. ramjet engine, with a 7,700 lb. thrust Atar 101E3 turbojet mounted in the centre of the ramjet as a starter and to provide additional power.

In layout too the Griffon is unusual, as it has a tail-first design, with rear-mounted delta wings and



pivoted fore-planes on each side of the cockpit, which looks as if it was tacked on as an afterthought. The wings span 26 ft 7 in. and the aircraft has a loaded weight of just under 15,000 lb. It was intended as the prototype for a 2,000 m.p.h. ramjet-powered interceptor.

Just Like Superman!

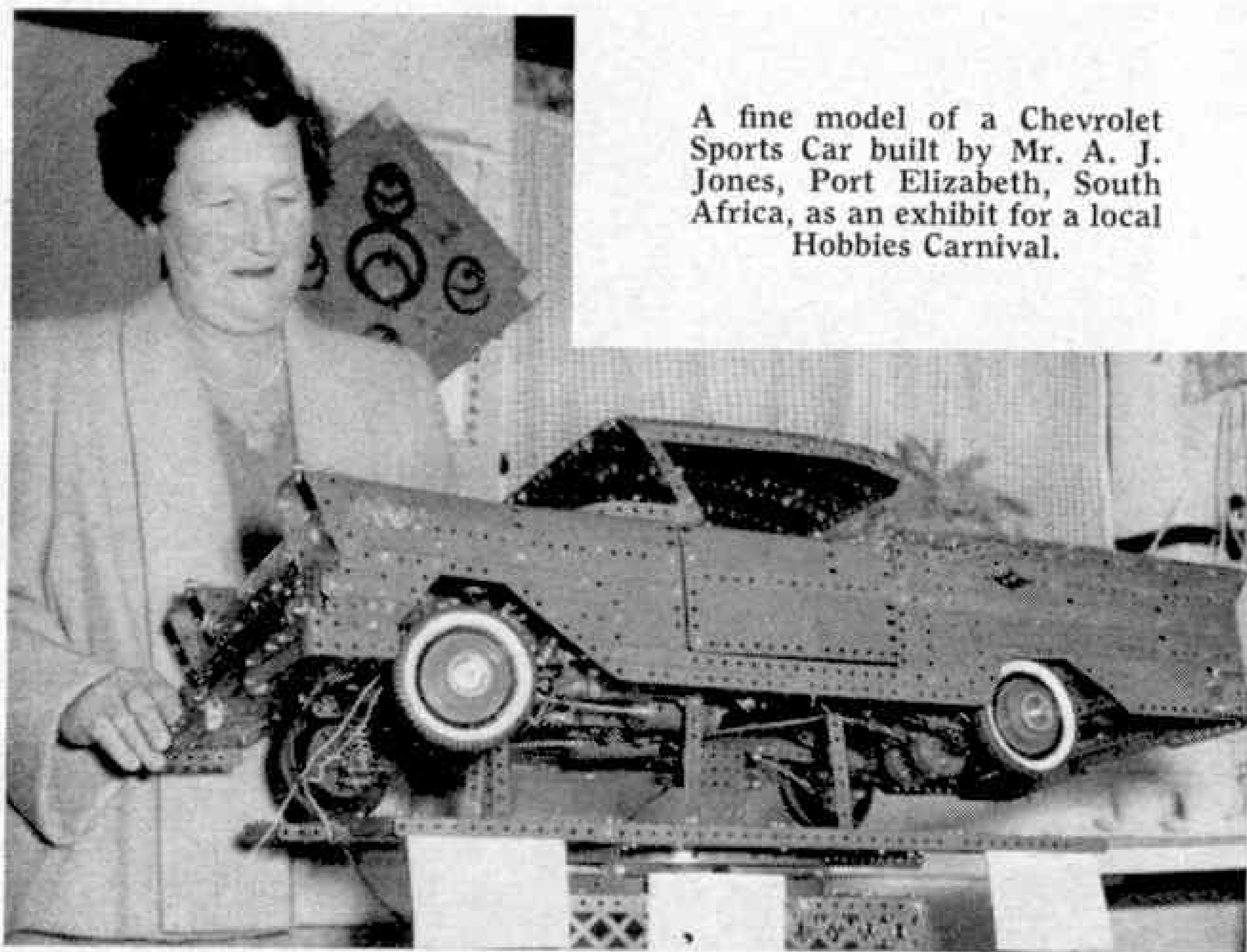
The Aerojet-General Corporation, whose giant rocket-motors power many of America's most formidable missiles, have designed a device that could turn every soldier into a superman. It consists of a small rocket, strapped to the man's body in such a way that when he fires it he is raised off the ground in a hop that would carry him safely across hills, rivers and minefields.

Helicopter Taxi Service

Bristow Helicopters Ltd. are operating a "taxi" service for passengers and freight from the new Westland Heliport in London, using four-seat Widgeon helicopters. Businessmen, tourists, Press photographers, doctors and others in a hurry can 'phone the Heliport and book the helicopter to take them wherever they want to go, in much the same way as they would telephone for a taxi or hire car. At present the service operates only in daylight, but night flights will be introduced in due course.



The remarkable French Nord Griffon II research aircraft which recently set up a new world speed record over a 62-mile circuit, as mentioned on this page.



A fine model of a Chevrolet Sports Car built by Mr. A. J. Jones, Port Elizabeth, South Africa, as an exhibit for a local Hobbies Carnival.

Among the Model-Builders

By "Spanner"

A Fine Model Car

The attractive working model car shown in the upper picture on this page was built by Mr. A. J. Jones, Port Elizabeth, South Africa, and it was one of the exhibits in a Hobbies Carnival held in that town in 1958. The photograph is reproduced by courtesy of the *Eastern Provinces Herald* and it appeared in their issue in July last year. The lady seen in the picture is Mr. Jones' mother, who is evidently very pleased with her son's handiwork.

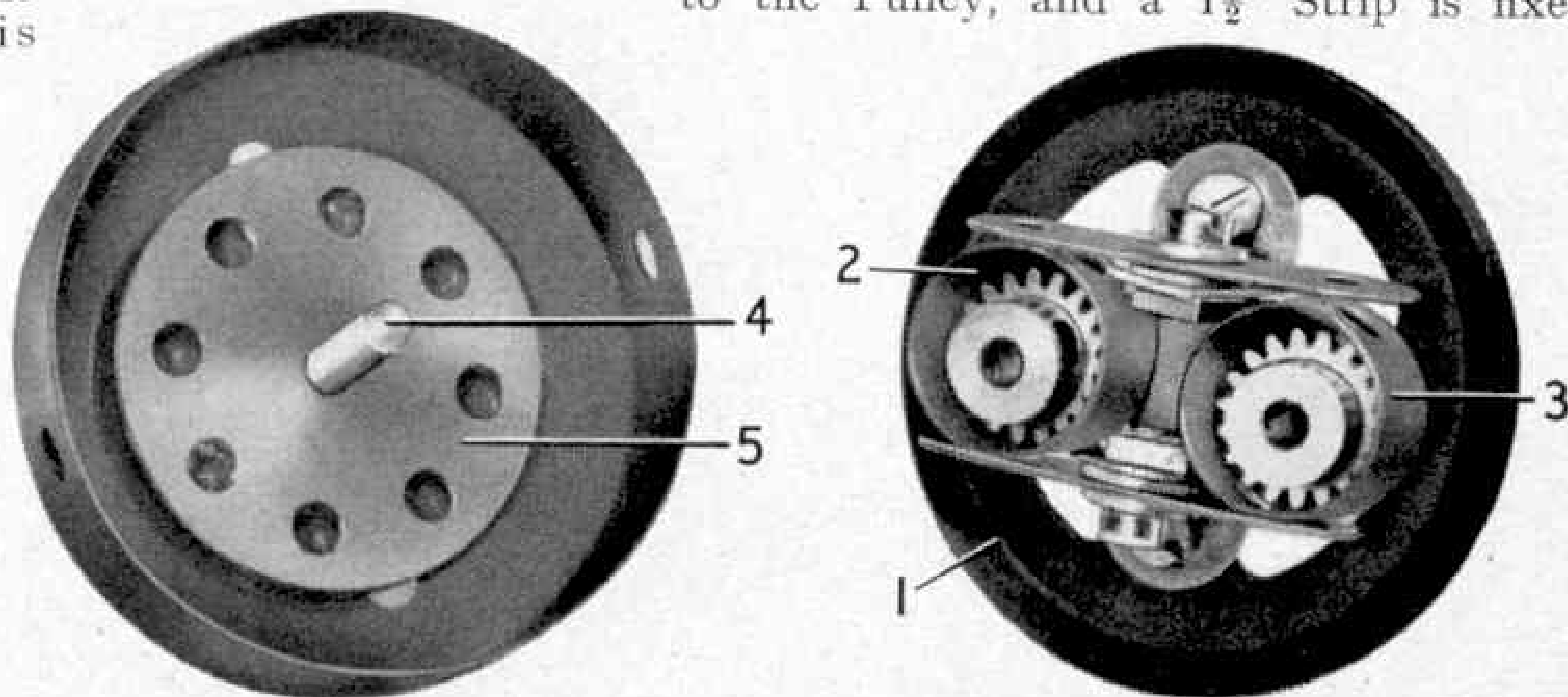
The model is built entirely from Meccano parts and is powered by an E20R(S) Electric Motor. Among its many mechanical features it includes coil suspension on all four wheels, hand and foot-operated brakes, semi-automatic clutch and gear-box with four forward and reverse drives. A non-slip differential is another feature of this interesting chassis and the bodywork is fitted with openable doors, electric headlamps and capacious boot.

Fig. 1. A centrifugal type clutch designed by Mr. J. R. Sharp, Huddersfield.

Centrifugal Clutch

I have received details of a centrifugal clutch mechanism of unusual design from Mr. J. F. Sharp, Huddersfield. The mechanism is shown in Fig. 1. The clutch is very compact and is contained entirely inside a Boiler End, which forms the driven member and is attached to the output shaft. The chief advantage of the mechanism is that although it is compact, comparatively heavy weights are used and these enable the clutch to transmit a powerful drive, particularly if the inner face of the Boiler End is lined with tape or thin rubber.

The driving member of the mechanism is a 2" Pulley 1 fixed on the input shaft, which should pass only part way into the boss of the Pulley. The remaining section of the boss accommodates the inner end of the output shaft 4 when the clutch is assembled. The Angle Brackets are bolted to the Pulley, and a 1½" Strip is fixed



to each Angle Bracket as shown, with a Washer between the Strip and the Angle Bracket for spacing purposes. The clutch weights are Chimney Adaptors 2 and 3, with $\frac{1}{2}$ " Pinions inside them. The Chimney Adaptors must be able to slide freely between the $1\frac{1}{2}$ " Strips.

The Boiler End should be fixed to a Bush Wheel on the output shaft 4. To prevent the weights from catching on the bolts in the Boiler End, a Wheel Disc should be slipped over the shaft, as shown.

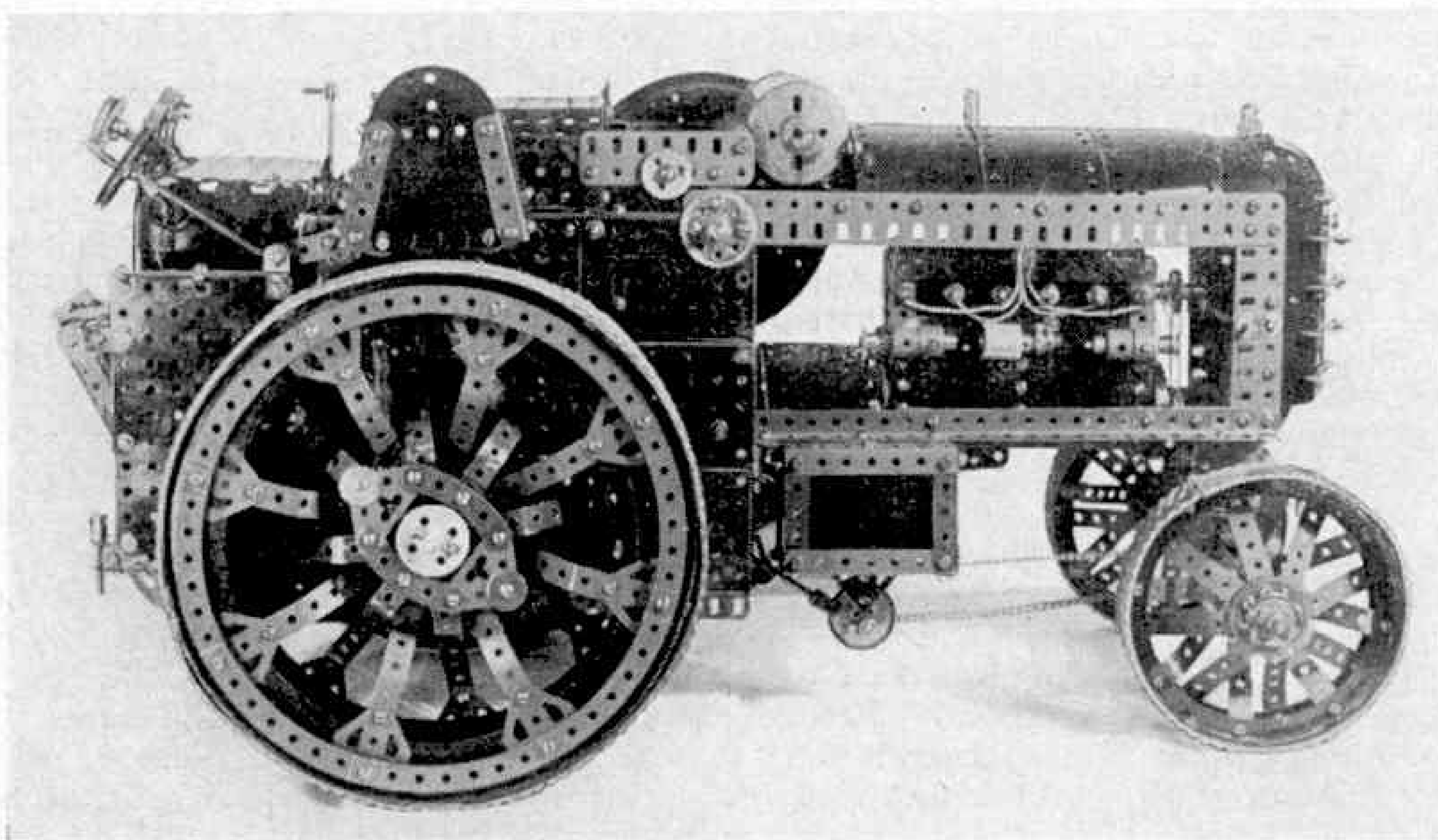
A Tractor from Italy

I was pleased to receive from Mr. A. Zaniboni, Naples, who is one of my many regular correspondents, photographs of a powerful model petrol-engined tractor that he has built, and I am including pictures of it here, as I think they will interest my readers generally. In one of these pictures the tractor is shown "taking its builder for a ride". Readers interested in the construction of models of this kind should note particularly the details of the wheels, which are not only very strongly built, but also are neat and handsome in appearance.

Mr. Zaniboni tells me that originally he designed the tractor to represent a steam-driven type, but as that type is not very popular in Italy, owing to the shortage of coal, he later altered his plans and modified the fore-part of the model on the lines of a petrol-engined machine. Mr. Zaniboni has been a keen model-builder for many years, and has built a number of really good models in the past. I am glad to have this opportunity of including a sample of his work in the *Meccano Magazine*.



Pictured taking a ride on a trailer hauled by a powerful Meccano Tractor, is Mr. Aldo Zaniboni, Naples. The Tractor has many novel constructional features that can be seen more clearly in the side view of the model that is shown below. Note particularly the wheel construction.



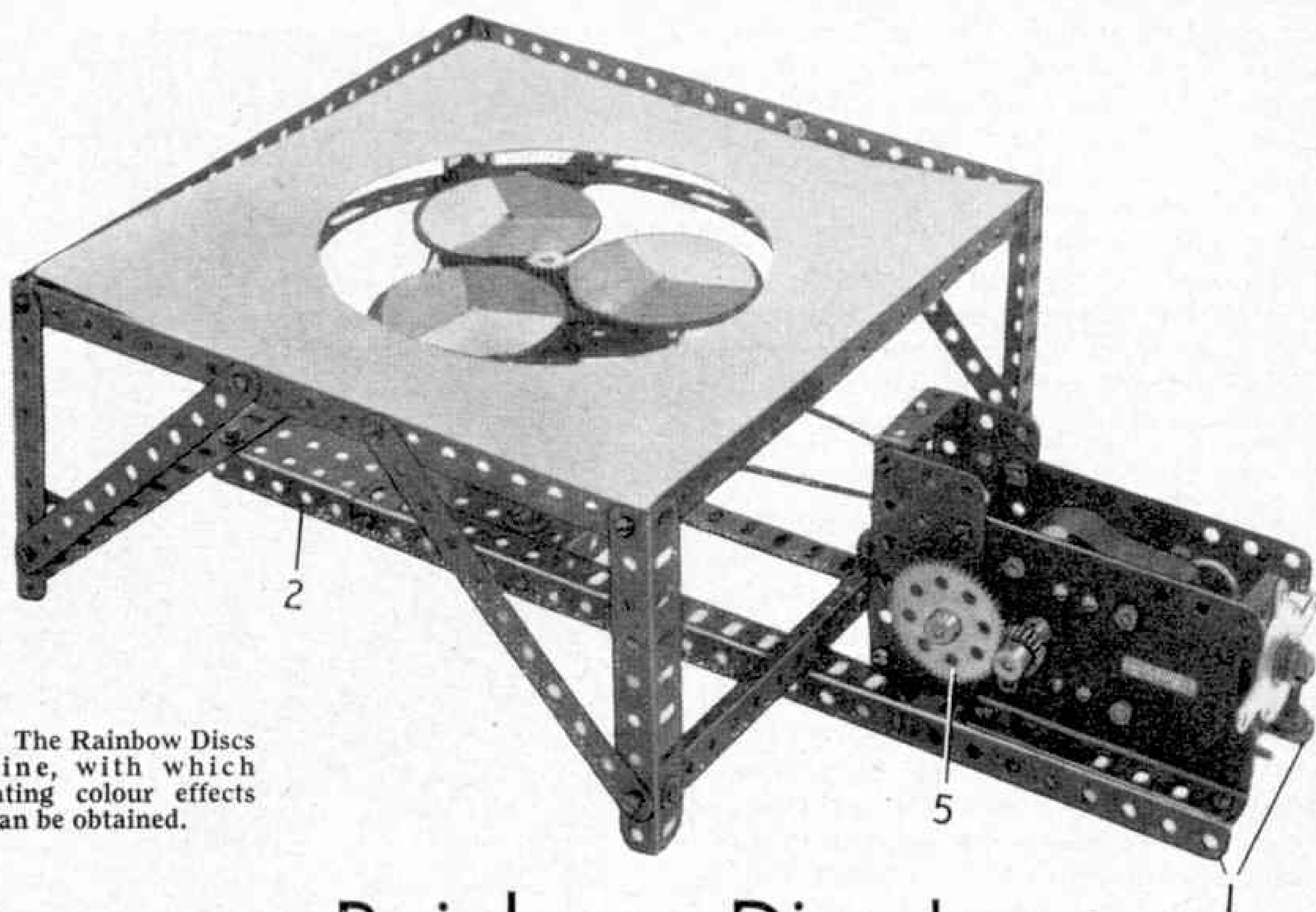


Fig. 1. The Rainbow Discs Machine, with which fascinating colour effects can be obtained.

Rainbow Discs!

Model gives Brilliant Colour Effects

FOR those with an Electric Motor, and a few gears and Angle Girders at their disposal, the novel Rainbow Discs model shown in Fig. 1 forms an unusual and attractive novelty. With this simple machine some most wonderful combinations of colours can be obtained and it is very easy to construct. In effect the machine provides means whereby three circular discs of paper, each divided into three segments of different colours, can be rotated at high speed. When the discs are in motion the various colours blend together and produce some fascinating effects.

To build the model first bolt two $12\frac{1}{2}$ " Angle Girders 1 to a $5\frac{1}{2} \times 2\frac{1}{2}$ " Flanged Plate 2, overlapping the latter 6 holes. Then fix an Electric Motor to the other end of the Angle Girders. To the Motor sides bolt two $3 \times 1\frac{1}{2}$ " Flat Plates and brace them at top and bottom with $1\frac{1}{2} \times \frac{1}{2}$ " Double Angle Strips 3 and 4. Fix a $\frac{1}{2}$ " Pinion on the Motor shaft, and arrange it to drive a 57-tooth Gear Wheel 5 on a $2\frac{1}{2}$ " Rod. This Rod has to carry also a $\frac{1}{2}$ " Helical Gear Wheel, which drives a $1\frac{1}{2}$ " Helical Gear Wheel 6 on a 3" Rod 7. Now fix a Cone Pulley Wheel to Rod 7. Bolt a Double Arm Crank 8 underneath the Flanged Plate and a Double Bent Strip on the top. These form the mounting

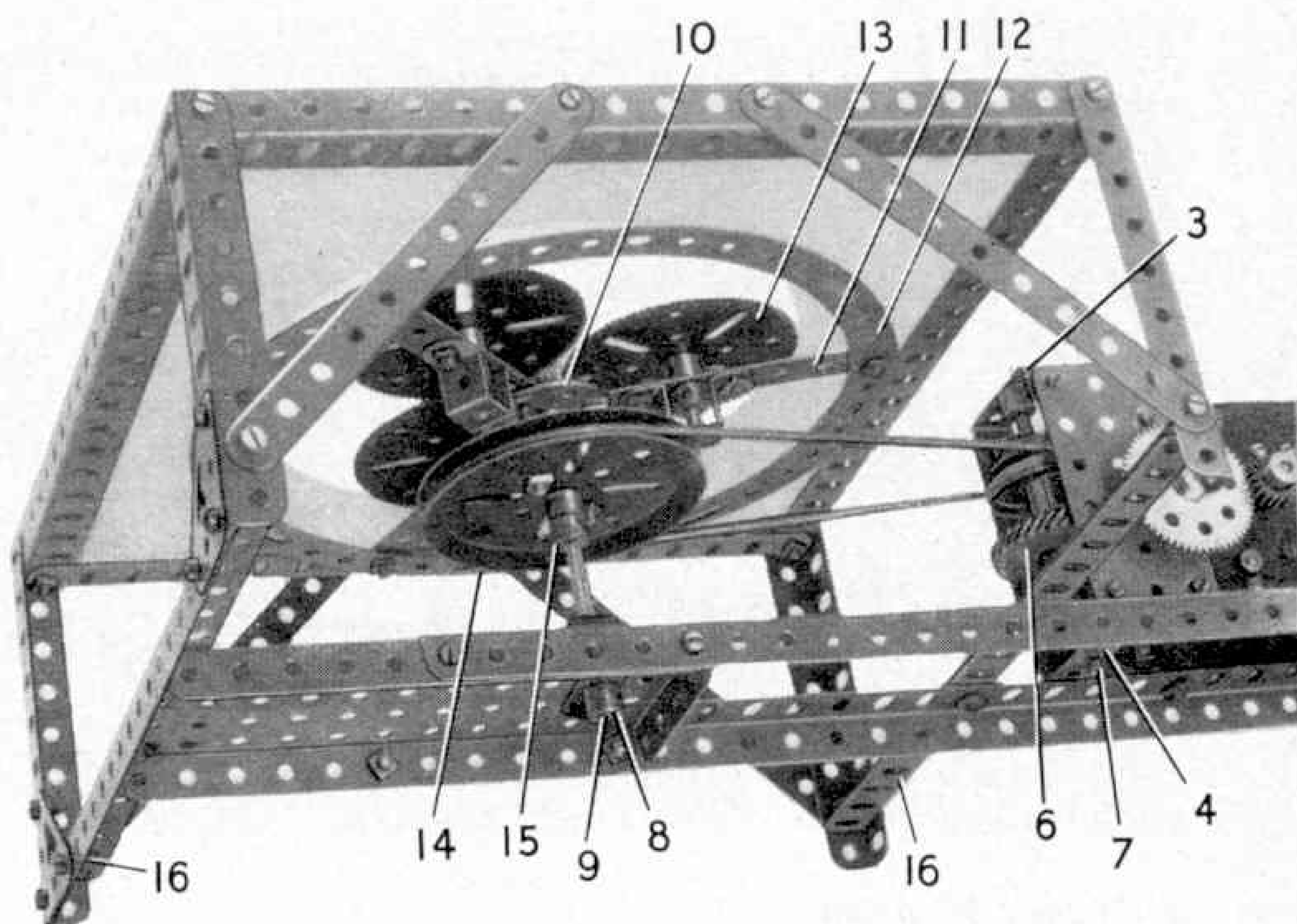
for a 4" Rod 9, which is fixed in the Crank.

To a six-hole Bush Wheel 10 (from which the Set Screw has been removed) bolt three $3\frac{1}{2}$ " Strips 11, one in every other hole, and fasten the ends of these to a Circular Strip 12, taking care that one Strip is bolted in a slotted hole so that the Strips are then evenly spaced at 120° to each other. The next thing is to bolt a Double Bent Strip to each Strip 11. These are to support $1\frac{1}{2}$ " Rods that carry three $2\frac{1}{2}$ " Gear Wheels 13. A Collar is used to hold each Rod in position. Fix two $1\frac{1}{8}$ " Bolts diagonally opposite each other in the Bush Wheel 10 and connect them with two nuts to the 3" Pulley Wheel 14 (with Set Screw removed). Fasten a $\frac{1}{2}$ " Pinion to the Rod 9 so as to engage with all three $2\frac{1}{2}$ " Gear Wheels. The gear unit is held in position by a Collar 15. The Motor drive is taken from the Cone Pulley to the 3" Pulley with a 15" Driving Band.

Bolt together four $9\frac{1}{2}$ " Angle Girders to form a square, and support this at each corner with a $4\frac{1}{2}$ " Angle Girder. Two further $9\frac{1}{2}$ " Angle Girders 16 must now be secured to the $4\frac{1}{2}$ " Angle Girders and they are bolted also to the Angle Girders 1 and one of them also to the Flanged Plate 2.

Cut a 6" dia. hole out of a $9\frac{1}{4}$ " square of white cardboard and place it on the top

Fig. 2. An underneath view of the Rainbow Discs Machine, showing the arrangement of the gearing mechanism.



or the frame as shown.

Finally, cut out three discs of paper about $2\frac{1}{4}$ " diameter, and divide each disc into three segments. Paint the segments bright yellow, red and blue. Glue the discs to the $2\frac{1}{2}$ " Gear Wheels, with the yellow segments facing the centre pinion.

By using differently divided paper discs and other colour schemes, an amazing variation of colour combinations can be achieved as the discs revolve.

Parts required to build the Rainbow Discs Machine are: 4 of No. 2; 3 of No. 3; 2 of No. 8; 6 of No. 8a; 4 of No. 9a; 2 of No. 15b; 1 of No. 16a; 3 of No. 18b; 1 of No. 24b; 1 of No. 26; 3 of No. 27c; 1 of No. 27d; 1 of No. 34b; 1 of No. 36; 4 of No. 45; 2 of No. 48; 1 of No. 52; 6 of No. 59; 1 of No. 62b; 2 of No. 73; 2 of No. 111d; 1 of No. 123; 2 of No. 133; 1 of No. 145; 1 of No. 186c; 1 of No. 196; 1 of No. 211a; 1 of No. 211b; 1 E20R(S) Electric Motor.

A Competition Reminder

The "Birds and Beasts" Competition that was announced in the May issue of the *Meccano Magazine* closes on 31st July next, and as it takes very little time to build a suitable model for entry in this contest, readers who have not yet sent in an entry, may still compete provided that they set to work without further delay. It is possible to build remarkably life-like

models of birds and animals from very few Meccano parts, and in a very short time, so that the pastime is particularly suitable as an occupation for short spells indoors during the summer months.

In order to take part in the Contest competitors should make models of any birds, beasts, fish or other creatures they like and then obtain either good photographs or sketches of them. These should be sent to "Birds and Beasts Competition, Meccano Ltd., Binns Road, Liverpool 13".

The Contest will be divided into two Sections: A, for model-builders under 12 years of age on 31st July next, and B, for those who will be 12 or over on 31st July next. The prizes shown in the accompanying panel will be awarded for the best entries received in each Section.

THE PRIZES

The following prizes will be awarded in each of the Sections A and B:

	£	s.	d.
First Prize, Cheque for	4	4	0
Second Prize, Cheque for	2	2	0
Third Prize, Cheque for	1	1	0
Ten prizes, each of	10	0	
Ten prizes, each of	5	0	



HORNBY RAILWAY COMPANY

By the Secretary

Road-Rail-Mail

IN the Hornby-Dublo pages in last month's *M.M.* reference was made to two recent introductions in the Dublo series of Dinky Toys, No. 067 Austin Taxi and No. 068 Royal Mail Van. This month you will see these in typical situations in the pictures on these pages. In the meantime another newcomer, No. 072 Bedford Articulated Flat Truck, has made its appearance. Probably some of you have already seen this, but if not the news of its introduction will be welcome.

This new Bedford is finished in an attractive manner, and is remarkably well detailed in view of the comparatively small scale to which it has necessarily been designed. It consists of a cab or tractor unit on four wheels, with a two-wheeled trailer. The headlamps, radiator grille and front bumper are picked out to represent a chromium finish, which gives the front of the vehicle the characteristic "face" that the real ones of this type have. It is of course just what is wanted on the roads and in the goods yards of 00 Gauge railways everywhere, as it is so adaptable and so easily steered and manœuvred. The

articulated trailer or "flat" is detachable from the cab unit, so that some interesting and realistic goods yard scenes can be arranged.

Like the Bedford lorry that was one of the earlier introductions in this series, the new Articulated vehicle is well adapted for the carriage of general goods, while it is specially useful for Container traffic. The bulk of a Hornby-Dublo Container, either

the furniture or insulated meat type, when seen from the front, looms above the cab in just the same way as the real ones do. How big these railway things

look when you see them in the street!

At least one Taxi should appear in any station layout and if space allows you can have a properly arranged Taxi rank outside your principal station. No queueing for taxis on a Hornby-Dublo railway!

The Royal Mail Van is another vehicle that always looks right when it is standing by the Station and it will have many other uses on any layout. You can arrange a group of these Mail Vans outside the Station in connection with T.P.O. workings, or you can simply have a single Van parked

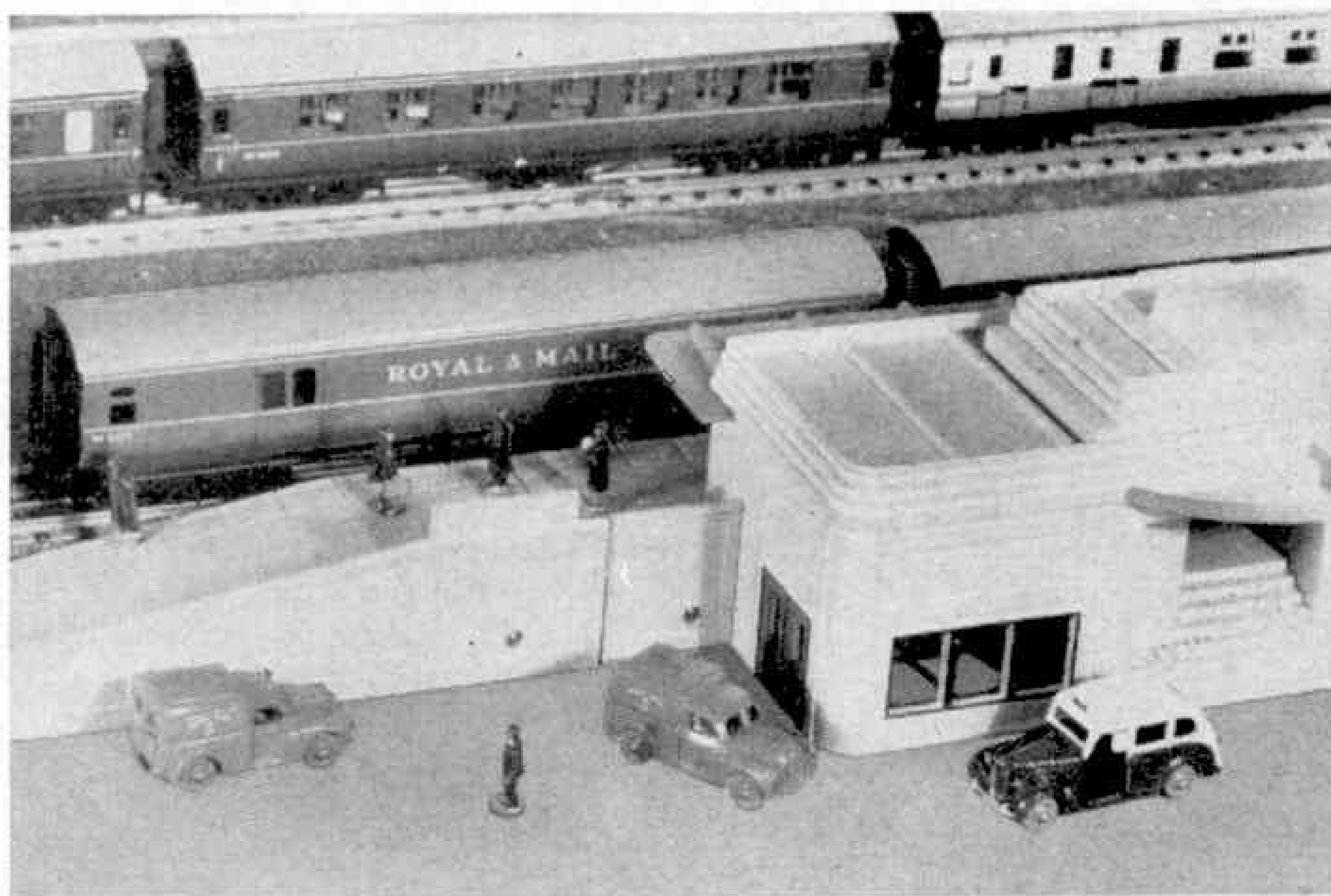
"Bristol Castle" travels light in the foreground of the illustration at the head of the page. A Low-Sided Wagon on one of the tracks in the distance carries a Dublo Dinky Toys Ford Prefect, No. 061.

Looking down on postal activity in a Station. Dublo Dinky Toys Royal Mail Vans are waiting on the roadway, no doubt for mail from the T.P.O. Van, and probably they had already unloaded mail to be carried on by the train.

near the lineside apparatus, as if being used for the transport of mail bags to and from the mail exchange point. And of course the Royal Mail Van looks perfectly well just on its own in any place on the roads of a layout and at any time!

This reference to T.P.O. and Mail services reminds me that it is some time since we last talked about these, and some of you who have not introduced these on your layouts may be thinking of doing so. You can depend upon it that if you do you will have a really good time in working them.

The situation and wiring up of the T.P.O. lineside apparatus appears to puzzle one or two enthusiasts, in spite of the very clear instructions that go out with each T.P.O. Mail Van Set. Putting it as simply as possible, the power supply to work the T.P.O. *must be entirely separate* from any used for train driving; and you must see that the T.P.O. lineside apparatus is

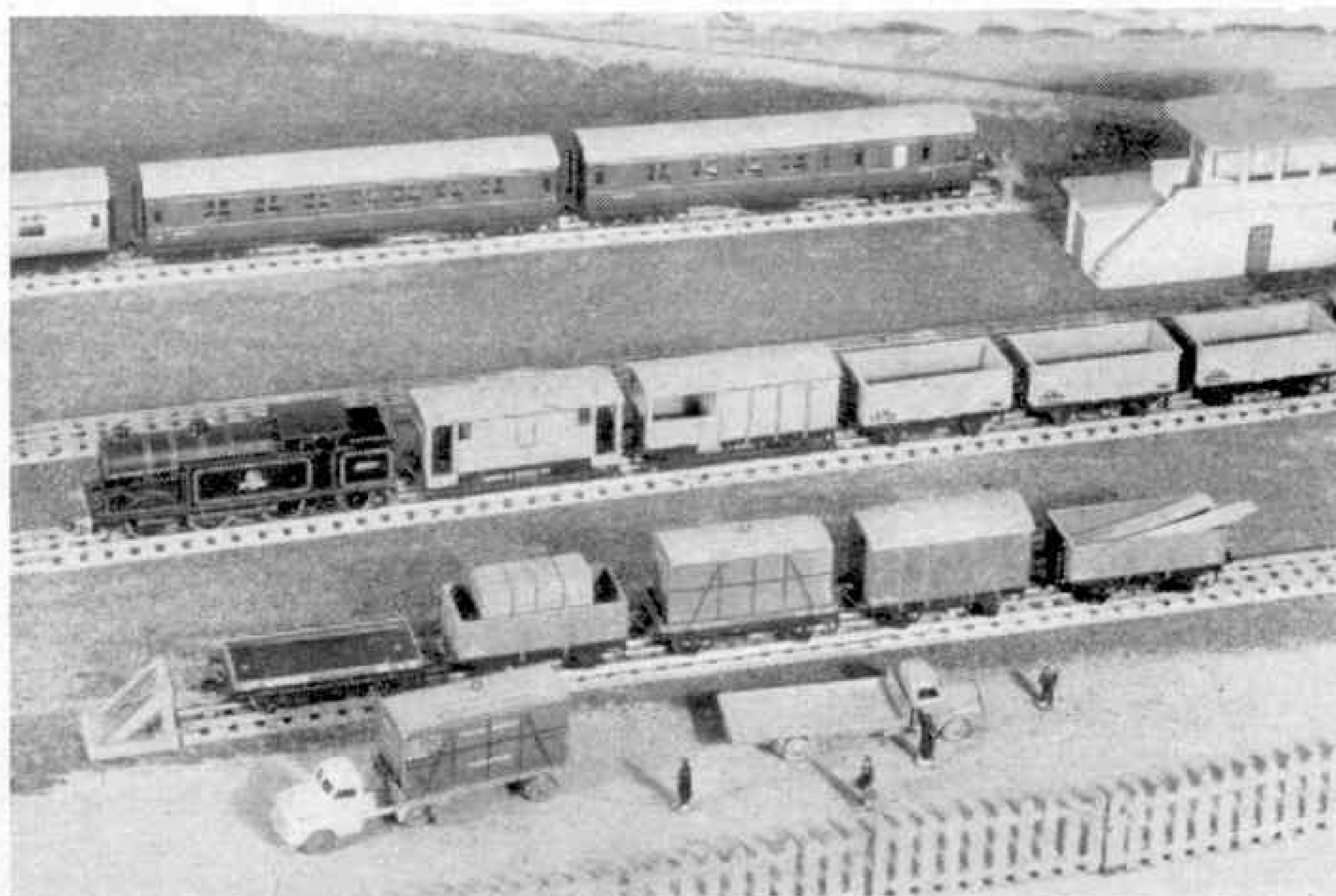


separated from any curved section of track by the length of at least a Straight Half Rail.

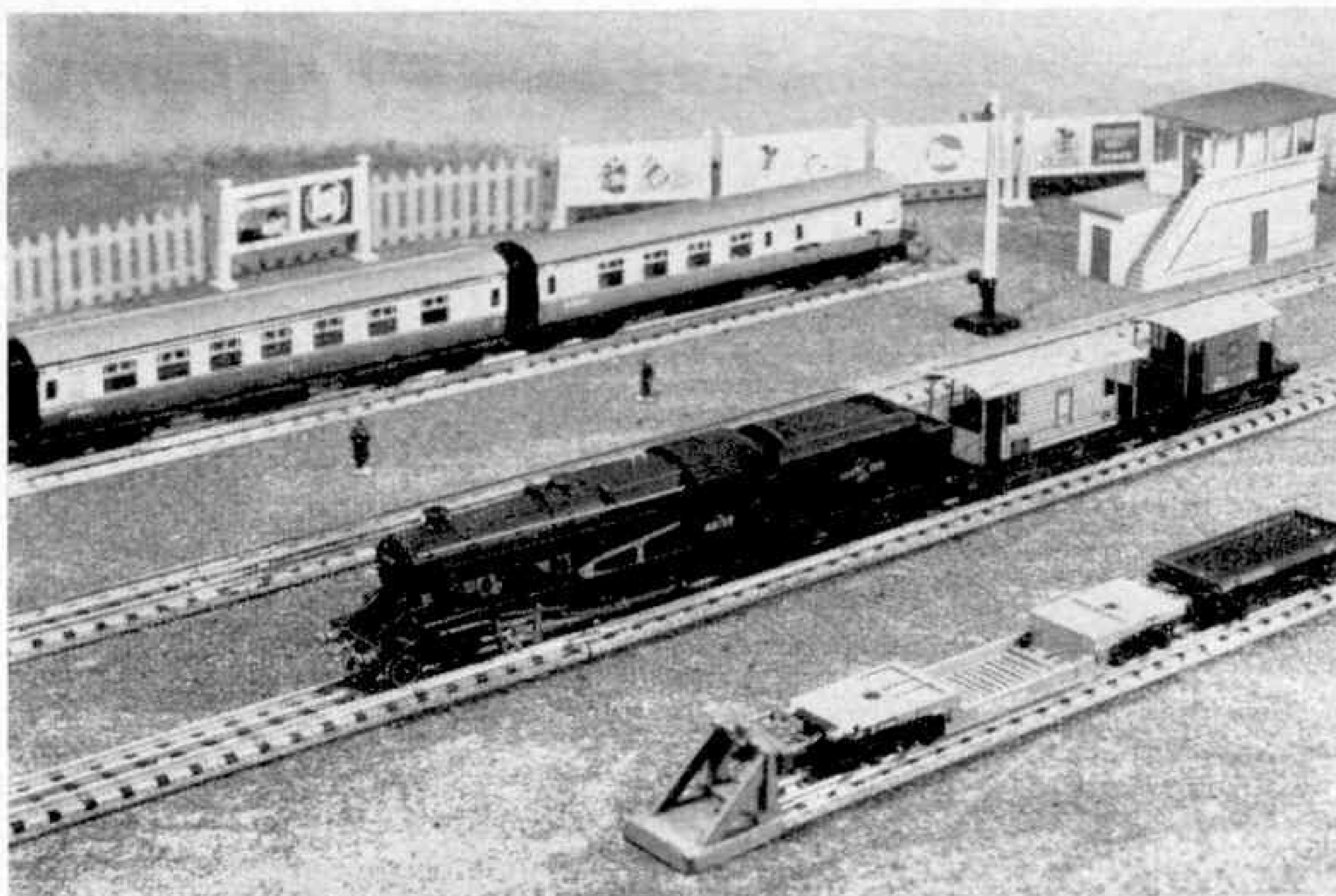
The reason for the latter statement is that the T.P.O. Van must have time to settle down to the straight run after passing off a curve. A Straight Half Rail provides the minimum length in which this can effectively take place, but if you *can* use a full straight Rail between any curve and the lineside apparatus, so much the better, and *DON'T* run your mail train too fast or the exchange of mail bags will not be carried out effectively. Remember that it takes time for the operation to be completed and a nice steady pace gives the best result.

While on road-rail topics I may as well remind you that the transport of motor

vehicles by rail is quite a common thing. You can follow this up in Hornby-Dublo and the picture at the head of this article shows a Dublo Dinky Toys Ford Prefect loaded on a standard Low-Sided Wagon.



The most recent Dublo Dinky Toy, No. 072 Bedford Articulated Flat Truck, hurries a miniature Container away from the goods yard. This easily managed vehicle has many uses on 00 Gauge railway systems.



Goods Brake Vans required down the line make up the "train" behind the Hornby-Dublo 2-8-0. The vehicles shown are of the older D1 type.

Just About Brakes

"**B**UT," you will say, "*Hornby-Dublo Trains do not have any brakes, so what is this all about?*" Really the pictures here provide the answer. "*Brakes*" to railwaymen mean brake vans, and as there are so far no passenger brake vans in Hornby-Dublo, "*Brakes*" to us must mean the Goods Brake Vans in the Hornby-Dublo range. There are several varieties of this type of vehicle in the illustrations here.

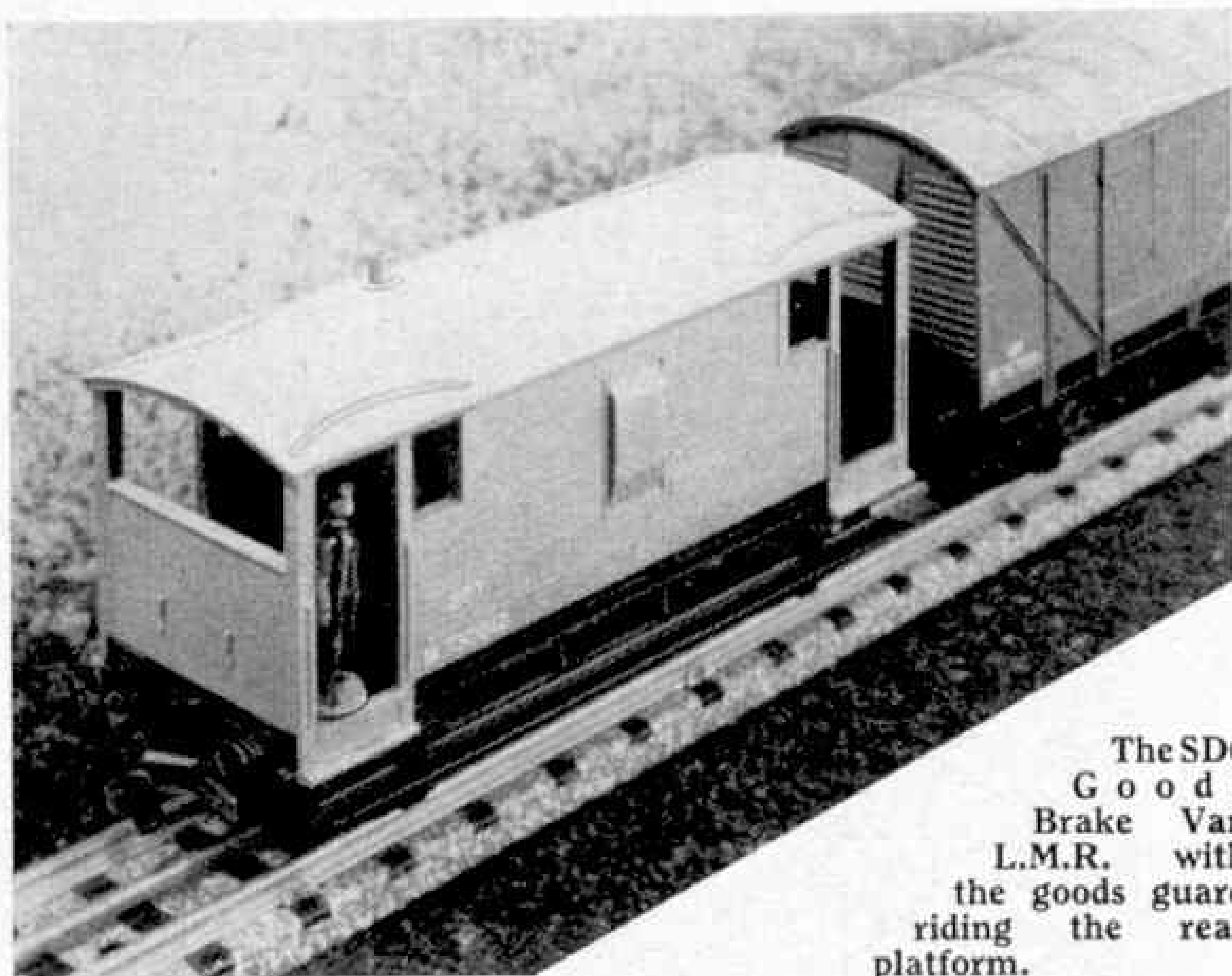
Last year saw the introduction in the Hornby-Dublo range of goods rolling stock of the fully detailed SD6 vehicles with moulded bodies. Continuing this transformation, the Goods Brake Vans now standard in the System have been produced in this way for some time. The most recent, the B.R. Standard Goods Brake Van, was fully described in the *M.M.* in January last.

Now the coming of the moulded Goods Brakes, of B.R., L.M.R. and W.R. types, does not mean that the Hornby-Dublo owner has no further use for his older vehicles of corresponding type. Two of these indeed are shown in the illustration at the top of this page, and there are many still in effective service on various layouts. Much the same thing applies in actual practice, where in spite of standardisation there are still various types of older goods

brakes built by the former companies.

Have you ever studied goods brakes on real railways? They are well worth it, with their varied details and markings. And the same applies in Hornby-Dublo. The real goods brake is a necessary vehicle on any freight train. On those including loose-coupled stock of the type familiar on our railways for so long, the guard assists the driver in the braking of the train. This is a combined operation requiring the exercise of good judgment, with an intimate knowledge of the road and its gradients on the part of both men. Although there is no actual braking to concern us, we must have a suitable Goods Brake Van on our miniature freights.

Goods brake vans with hand brakes only are finished in the same shade of grey as ordinary wagons. Those which are fitted with vacuum apparatus, and they are increasing rapidly in number, are distinguished by their bauxite brown colour, and in this respect are consistent with the freight type vehicles similarly equipped. Needless to say, this distinction is preserved in the Hornby-Dublo system, in which the L.M.R. and W.R. patterns of Goods Brake Vans have grey bodies, while the most recent one, the B.R. Standard type,



The SD6
Goods
Brake Van
L.M.R. with
the goods guard
riding the rear
platform.

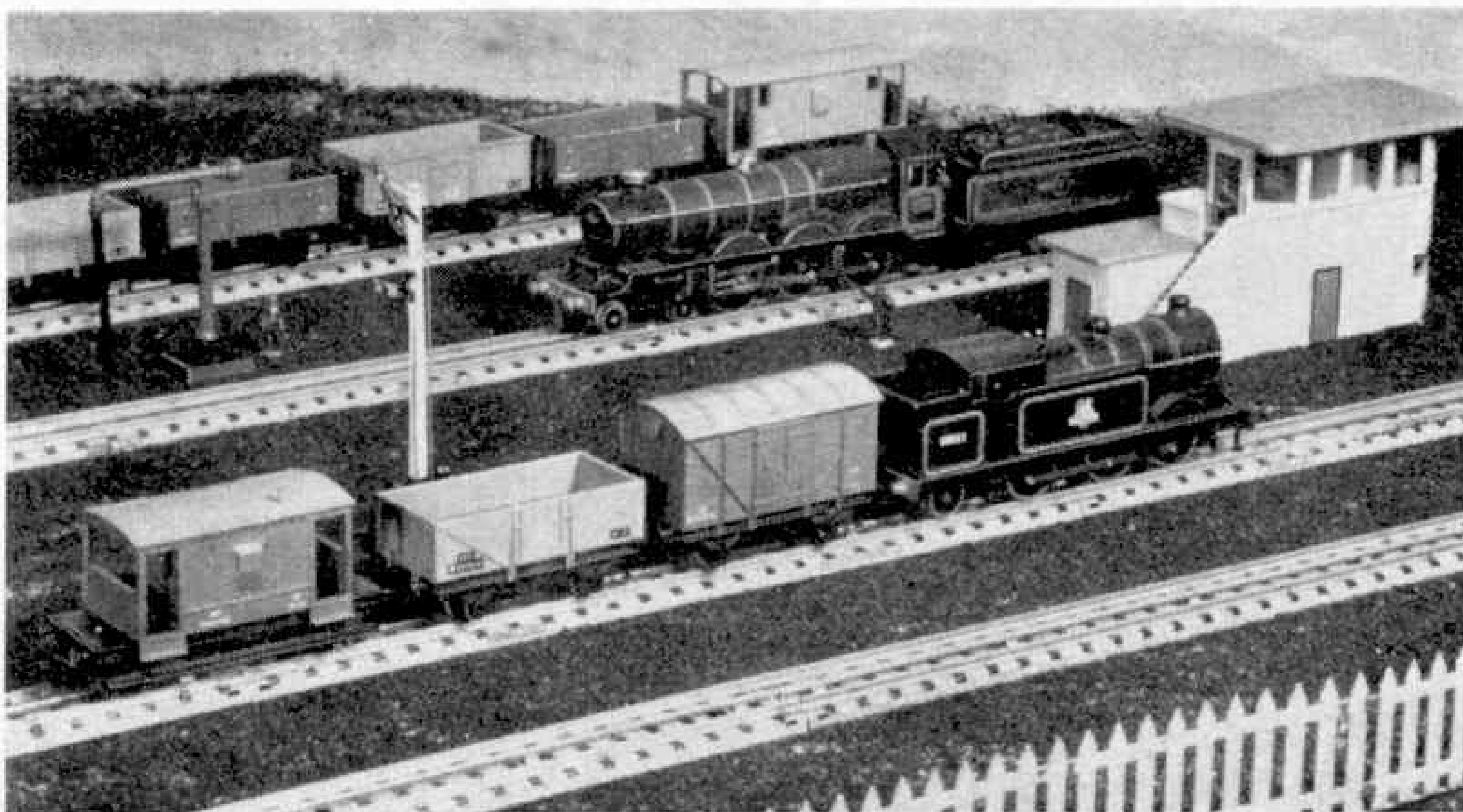
appropriately represents a "fitted" vehicle. This does not mean that this latter type of Van cannot be used on ordinary goods trains. In fact one frequently sees the sort of thing shown in the lower illustration on this page, where a pick-up goods is making its way to the next siding, where it will have work to do.

The operations called for in running a pick-up goods in Hornby-Dublo are simple in themselves. But the coupling and uncoupling that may mean a lot of hard work for the goods guard or shunter in real life is made easy in miniature by the Automatic Couplings standard on Hornby-Dublo vehicles, and by the Uncoupling Rails, both hand-operated and electrically-

operated types, that are a feature of the system. The various movements that will have to be carried out at different places must be borne in mind when settling the position of these useful Rails.

Although goods brake vans must be attached for main line runs, in certain conditions trains can be run without a goods brake over tracks that are not used by passenger traffic. Transfer movements from one part of a large yard to another, along dockside railways and in similar locations, where speed is very low in any case, are invariably carried out without a goods brake van being attached. A tail lamp is hung on the rearmost hook, and, as a rule, the brakesman or shunter rides on the engine. This sort of working may simplify operations for you in certain "tight spots" on your layout, where there is just room for a given number of vehicles.

On the other hand, if you have a generous amount of space for a layout, or at any rate you are able to devote a good area to a marshalling yard, you may find it possible to reserve one siding for your Goods Brake Vans. As each train arrives for attention, the corresponding Goods Brake is placed in this siding and left there until required again. In this way, where there are several Goods Brakes in use, there will always be a "pool" from which a Van can be drawn.



The well-known B.R. Standard goods brake van is splendidly represented in the Hornby-Dublo SD6 series. Here is the Van concerned, on a pick-up goods train.

The "Dunster Line" and Some Others

By "Layout Man"

"Layout Man" describes readers' Hornby-Dublo layouts of special interest. You are invited to write to him about your railway, and to send photographs or layout drawings for reproduction in the M.M. Payment will be made for descriptions and pictures used in the Magazine—Editor.



THE mark of a really "live" Hornby-Dublo Railway is that it is continually kept up to date. A fine example of this is the layout seen in the pictures on this page. This is known as the *Dunster Line*, and is owned and operated jointly by Michael and Donald Partridge, H.R.C. members Nos. 201662 and 201663 respectively, of Quarndon, Derbyshire. These enthusiastic brothers are very proud of their line. They have added to it and replanned it from time to time, and now they tell me that it cannot be extended further. Yet it must be modernised, so they

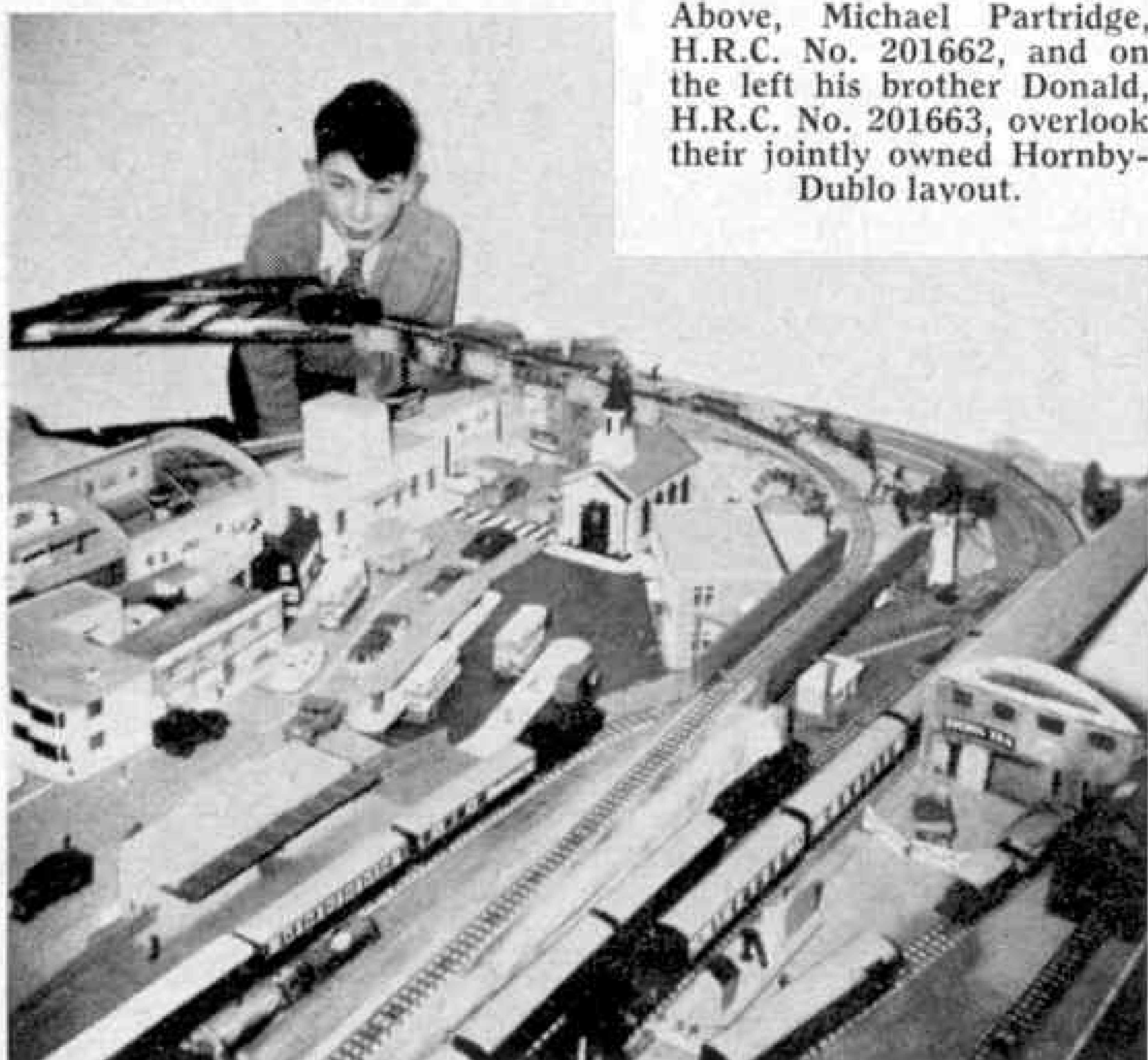
decided to tell me all about it before completely rebuilding it.

There is everything to be said for the revision and extension of a layout design from time to time. Only in that way can fresh operations be developed, to take advantage of new equipment, and new traffic schemes built up. Often the urge to make changes follows the observation of something in actual railway practice that the owner thinks it would be fine to do on his own line, and so he sets to work. On layouts such as that at which we are looking re-arrangement is eased because the lineside

effects do not include a great deal of scenery as such. But notice here the air of realism. This is due to the use of buildings and roadway components disposed in a realistic manner, and of such a self-contained character that their positions relative to one another can readily be changed if major alterations to the layout make this necessary.

Possibly the Partridges have begun work on the re-construction of their railway by this time, and if what they have done so far is any guide the result should be exciting. There is plenty of space available for a good layout, for their system is 12 ft. long and 8 ft. wide. So there is plenty of baseboard area for railway, town and other effects, and the operators find accommodation in a "well" formed towards one end

Above, Michael Partridge, H.R.C. No. 201662, and on the left his brother Donald, H.R.C. No. 201663, overlook their jointly owned Hornby-Dublo layout.



of the baseboard as is evident from the illustration opposite, where Michael is overlooking a corner of the system known as *South Yarnwood*. There an Island Platform and associated tracks serve a seaport area, clearly shown by the quayside and ships in the illustration.

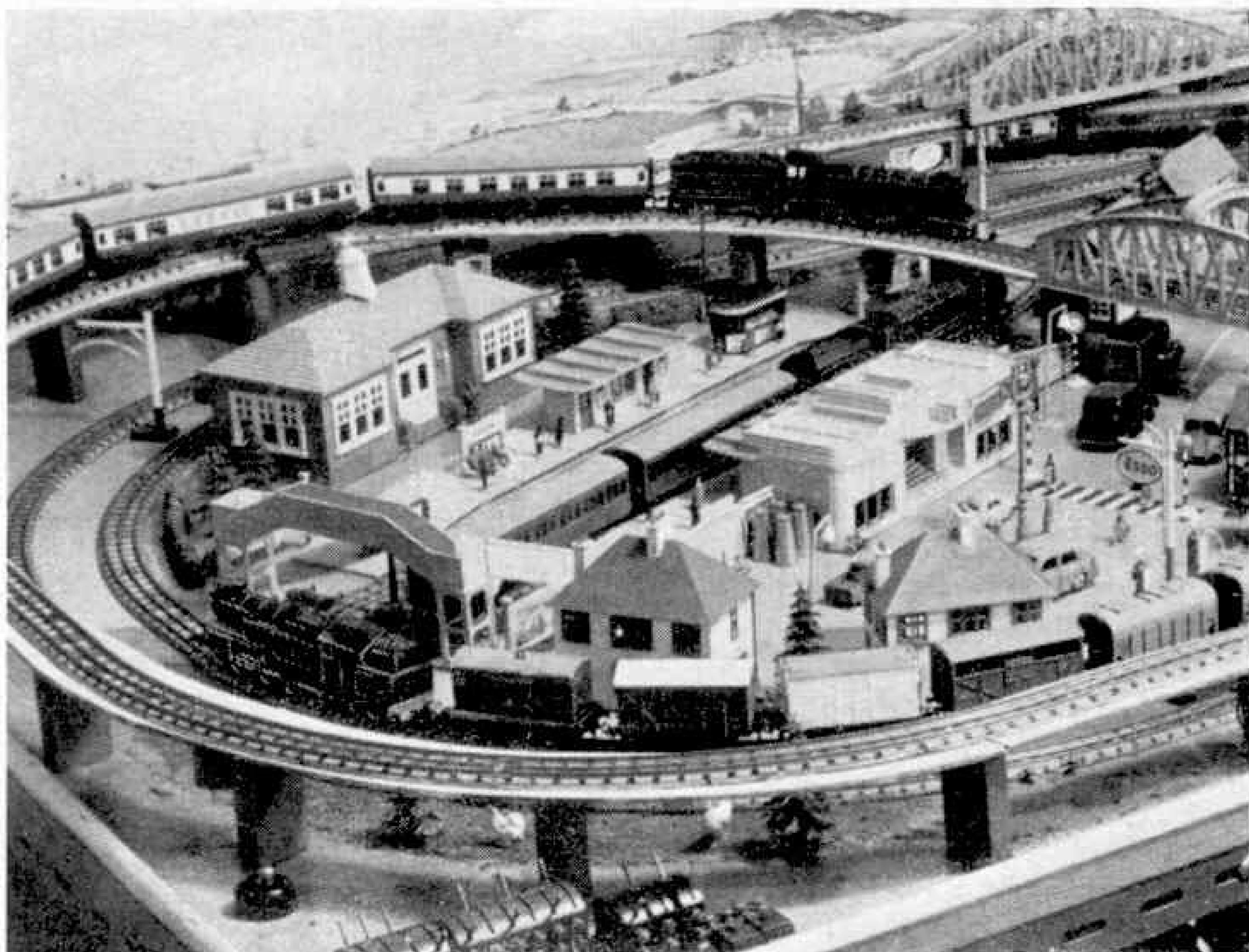
Toward the opposite end of the same side of the railway is *North Yarnwood*, this being the part at the extreme right hand side of the lower picture. Toward the lower left hand corner in the same view is *Spitfield*, where a Hornby-Dublo Through Station is used to provide a terminal for a branch from the main line circuit, which it joins just to the right of the plate girder bridge carrying another track over the actual branch. The position of the main lines is shown by the two trains passing one another in the lower illustration.

These main tracks follow the popular so-called oval form, so that they curve round at the upper part of the layout shown to reach *Crawford*, where the station serves the most important centre on the system. The arched roof of *Crawford* station comes just about half-way up the left hand side of the illustration in which Donald is looking across the railway from a point outside a girder bridge that leads another branch to the high-level station of *Phawnton*, located in the opposite corner from *South Yarnwood*.

The double track main line does not enclose the control "well" but there is an outer loop that does so, leaving the outer main line near *Crawford* and rejoining it just in front of the *Silver King* locomotive in the first illustration that is heading its train round this loop. In its course the loop traverses a tunnel passing under the raised section where *Phawnton* stands, this

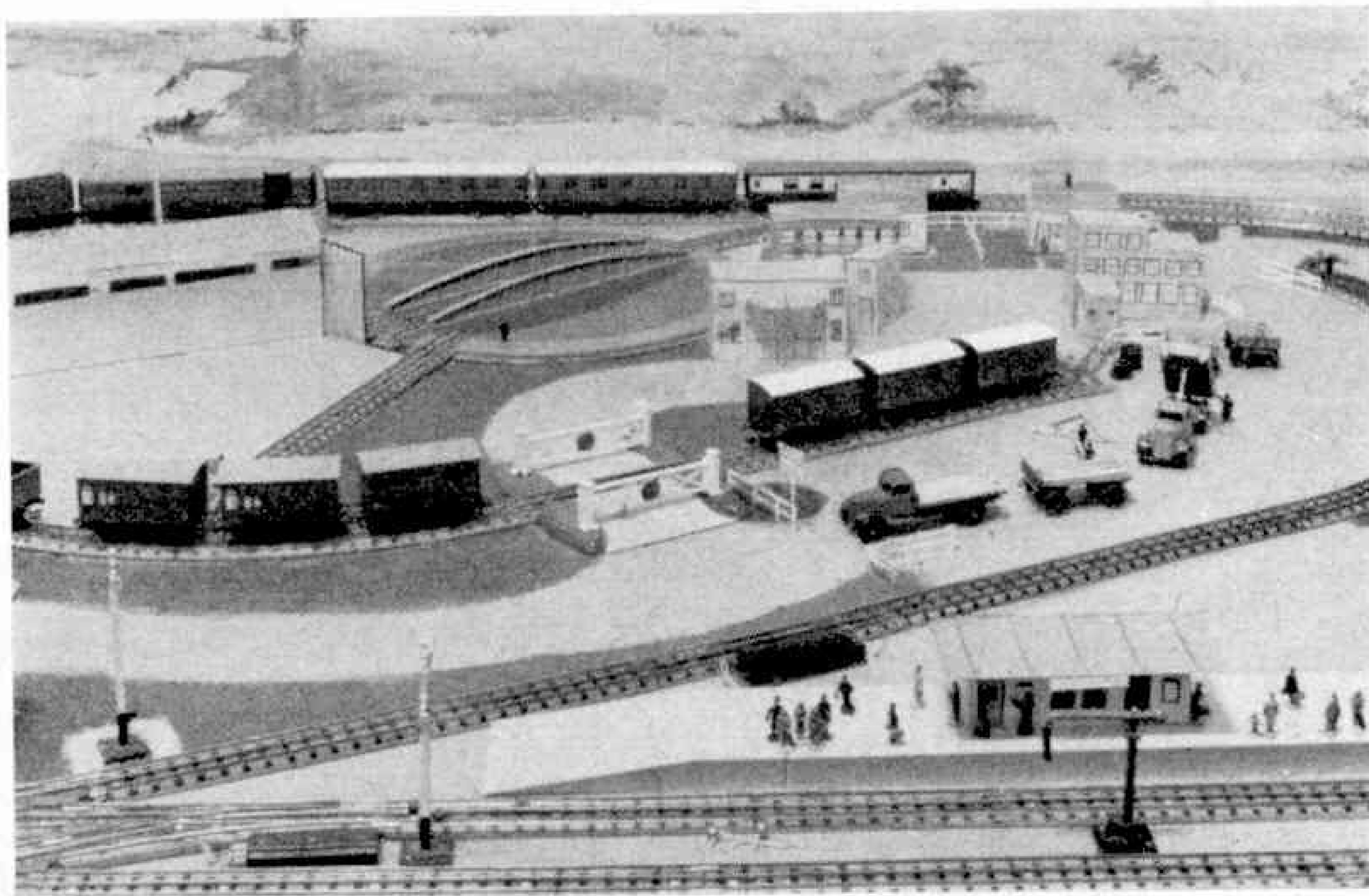
being a single bore some 9 ft. long.

Needless to say there is plenty of traffic on this busy system both by rail and road. In addition to the passenger train services, for which there are three separate sets of Hornby-Dublo Coaches, both corridor and non-corridor, there is plenty of goods traffic, for which, as might be expected, plenty of Wagons for coal are provided. There are various Vans too, and Bolster Wagons, the total goods stock numbering approximately 30. To work the trains there are six locomotives, including two Hornby-Dublo 4-6-2s and, naturally, the most recent addition, the L.M.R. 2-8-0, is first favourite



One end of the Hornby-Dublo layout of Brian Mountford, Great Barr, Birmingham. The raised track layout, which has led to the effective introduction of Girder Bridges, although simple in general design, is a very impressive feature.

for the heavy freights. The engines are allocated to the various stations and their working is arranged accordingly. In spite of the extent of the layout it has not been convenient to incorporate a locomotive yard, but advantage is taken of the long tunnel, into which the engines can "disappear." The operator has access to the inside of the tunnel and can remove the engines from the track, to be stored on shelves when the line is not in use. Apart from this particular feature, it is always wise to have means of reaching the inside of a long tunnel such as this one just in case there is any mishap at any time. When such things do happen, they always choose to occur in a tunnel or other spot not so



easily reached in the ordinary way.

So there is the line the Partridge brothers have built and the happy services they have run on it. Now we wait to see what this experience will bring in the form of an improved layout, and in the meantime many of you may find some inspiration in their efforts up to date.

Reference to the high level section on the layout just described brings us again to a point that frequently crops up in correspondence with Hornby-Dublo owners. This concerns the method of arranging a high-level section. Sometimes the elevated track is combined with some scenic or engineering work, a built-up viaduct section perhaps, such as we have seen before in these pages. Alternatively miniature "earthwork" representing an embankment may be featured, using say brown paper, sacking or some similar material treated and painted to give a realistic appearance.

Whatever the final result, the basic construction invariably has to consist of a series of supports with a base running over them to support the track and this sort of thing is clearly shown in the picture on page 313, showing part of the layout of Brian Mountford whom we have met before. Brian's father, Mr. R. Mountford, is Chief Engineer and he is to be congratulated on his work in carrying out the recent additions to the system, which incidentally make

Above is a fine view across the centre of the layout of Brian Mackintosh. Various Hornby-Dublo accessories, including the Turntable and the Level Crossing, are prominent on the system.

good use of the Hornby-Dublo Girder Bridge, as is evident from the illustration. In effect on a stretch of line like this we provide a small and narrow "baseboard" for the raised track, supported on blocks. Sometimes lack of space prevents anything further being done, but as a rule this type of construction is masked by subsequent engineering or earthwork developments.

You will no doubt have noticed how effective is the scenic back-strip along the far edge of the layout board. This gives real depth to the scene, combining both marine and landscape features. There is a similar effect of depth in our last picture, which shows parts of the Hornby-Dublo system of Brian Mackintosh, of Montreal, Canada. His scenery certainly helps out the effect of the various lineside buildings that he has provided, but what I like about the scene shown is the attractive way in which our Canadian friend made use of the Hornby-Dublo Level Crossing and Turntable, as well as the Island Platform in the immediate foreground.

While we are at the station, so to speak, notice the realistic grouping of the miniature figures, a point that is sometimes missed, even on the best layouts. One should not simply stand up these little people just anyhow. Some groups, with some single figures, help to give "real-life" look to the platform and station premises.



Club and Branch News



WITH THE SECRETARY

A "FEATHER IN THEIR CAP"

Successful exhibitions are the finest publicity that a Club can have, as they bring its constructive activities to the notice of the local people in a way that arouses immediate interest and admiration. This is just as true of Clubs in distant countries as here in the British Isles. A case in point is the Maylands M.C., in Western Australia, whose annual exhibitions in the Maylands Town Hall are quite an event, and have attracted visitors from places as far as sixty miles away.

The latest tribute to the excellent work of this flourishing Australian Club is an invitation from one of the leading retail stores in Perth to stage an exhibition in the store, the company paying all advertising and other expenses. Meccano model-building has always been the main activity of the Maylands M.C., so they are well able to make the most of this important occasion.

CLUB NOTES

CONSETT Y.M.C.A. M.C.—The Club took part in the Y.M.C.A.'s *Leisure Hour Hobbies* exhibition, displaying a fine range of Meccano models, a gauge 0 railway and their large model industrial layout. Summer plans include visits to railway depots, shipping yards on the Tyne and, if possible, a visit to Headquarters at Liverpool. *Secretary*: D. F. Trout, 66 Sherburn Terrace, Consett, Co. Durham.

ASSTEAD FREE CHURCH M.C.—A fine Meccano lawn mower won first prize in a model-building contest. Other activities have included a games evening, and Hornby Gauge 0 train operations. There is so much competition between members for appointment as Secretary and Treasurer that members are being given short terms in office in turn. *Secretary*: C. Price, 32 St. Stephens Avenue, Ashted, Surrey.

NEWTOWN SCHOOL (WATERFORD) M.C.—At the time of writing this report, members are busy constructing models for the Club Whitsuntide exhibition. This time members have been given a free choice of subject, so

a really wide variety of models is anticipated. *Secretary*: J. Gillespie, Newtown School, Waterford, Eire.

AUSTRALIA

MAYLANDS M.C.—Ten new members have been enrolled, and most of them show promise of developing into good members. Meccano model-building continues to be a major occupation, but several new activities are to be introduced during the current Club year, time and funds permitting. *Secretary*: T. Down, 16 Kennedy Street, Maylands, Western Australia.

NORTHERN NIGERIA

GINDIRI SECONDARY SCHOOL M.C.—At one meeting the Master in charge gave a talk on *Tools*, explaining their purpose and how to use them. At model-building meetings the members are divided into groups. *Secretary*: P. M. Tahal, Sudan United Mission Secondary School, Gindiri, P.O. B/Ladi, via Jos, Northern Nigeria.

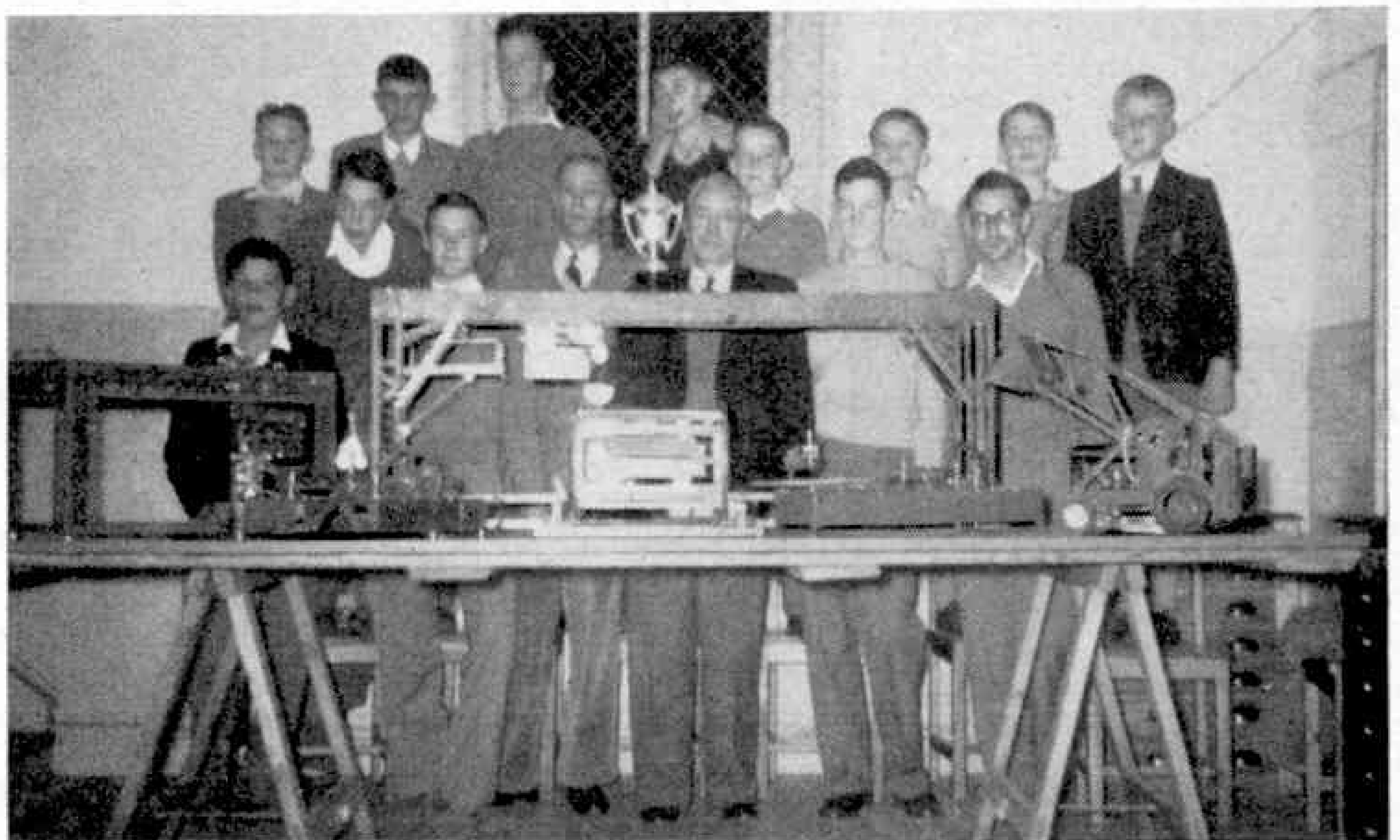
BRANCH NEWS

NEWPORT (I.O.W.) C. OF E. JUNIOR BOYS' SCHOOL — The Branch has received a gift of rails. It has been decided to straighten the track between *Forest Loop* and *Quayside*, on the Branch layout. Members are now familiar with the timetable, and operations are being carried out much more efficiently. *Secretary*: R. Clark, 20 West Street, Newport, Isle of Wight.

KIDDERMINSTER MODEL RAILWAY CLUB—This Club, affiliated to the H.R.C. as Branch No. 560, recently enrolled its one hundredth member. Mr. Mather and Mr. Carter have been busy providing a permanent table for the Gauge 00 layout, and the two 8 ft. x 4 ft. tables which have accommodated it hitherto are now available for the Hornby Gauge 0 system. *Secretary*: E. J. Ward, 27 Whittall Drive, Kidderminster.

SOUTH LINCOLN — There has been full attendance at meetings. Plans are going ahead for a portable Hornby layout which can be conveniently transported to garden fêtes, etc. It is hoped to visit Grantham, a B.R. Eastern Region main line station, and later to organise a trip to Headquarters at Liverpool. *Secretary*: A. J. Sharp, 49 Doddington Road, Lincoln.

Officials and members of Cape Peninsula M.C., Cape Town, South Africa, with prize-winning models in the Club's Annual Group Competition last year. Mr. F. Korck, President, is third from the right in the front row, and next to him, on his right, is Mr. Z. A. de Beer, the Leader. Mr. T. Venn, Secretary, is third from the left in the back row.



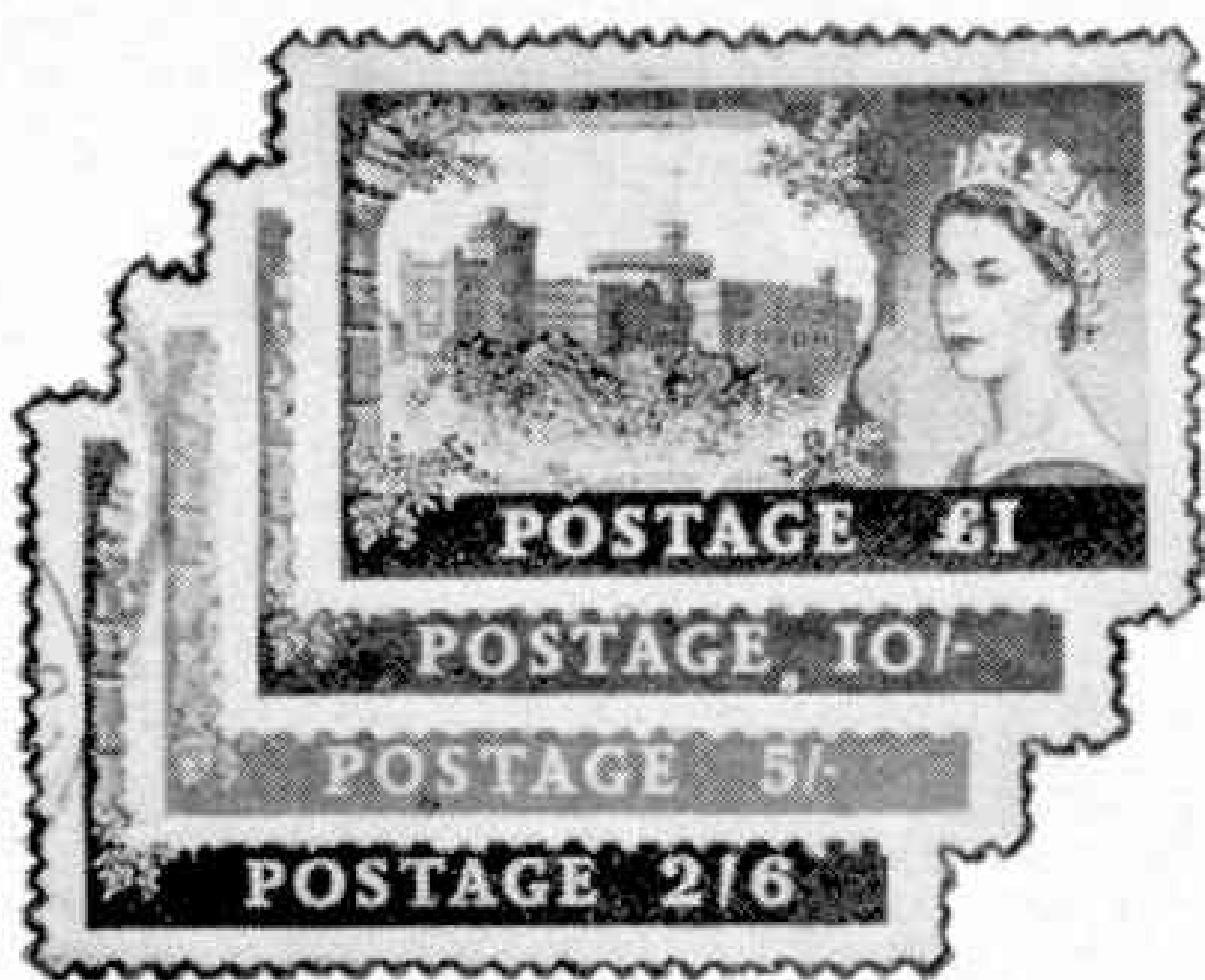
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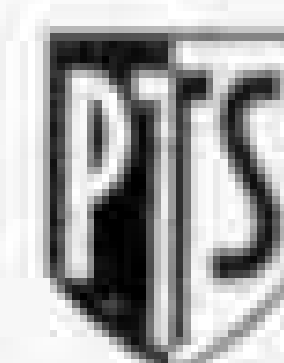
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For other Stamp Advertisements see also pages 318 and xxii

Stamp Collectors' Corner

By F. E. Metcalfe

PERU FOR LUCK

If a collector is to retain his interest in the hobby, he must feel that he is making progress to an end, and the only way he can do that today is by limiting his interests to either one or two countries, or to certain periods. There are quite a number of collectors who like to collect the stamps of a foreign country, but when they look at a catalogue and see how complicated, not to say expensive, the earlier issues are, they sometimes write for advice.

I have just been reading a letter of this kind. The writer, who lives in Sussex, says that he is tired of his thematic collection, for he has only been interested in

the designs of the stamps and he feels that the limit thematic collecting imposes reduces the hobby to the collecting of cigarette cards! Stamp collecting can and should be much more than that, if it is to be a more intellectual pursuit than the gathering of mere pictures.

He goes on to say that he would like to go in for a South American country, but looking at all the stamps they have issued, and the cost of these

stamps, he feels that he simply cannot afford to buy them. What therefore should he do?

I quite agree that early stamps of most countries are quite outside the financial range of ordinary folk. But why go in for these old stamps? We can afford the modern ones, which are at least as attractive as the older ones, and the collector can often pick up bargains that are never likely to come his way as far as the classic issues are concerned.

All right, we'll go in for modern stamps, but which? From what my correspondent wrote I think he is interested only in one country, and as there are likely to be others who are looking for a South American country, I am going to suggest the postal issues of Peru of the twentieth century, used, to all concerned. That will certainly give them plenty to think about, though after all you don't want to start a collection that you can complete without some effort and thought. There is no fun in that.

The stamps are to be found listed in Gibbons Part III, and in their Simplified. A



new edition of the former is due out in the Autumn, and that will give more details than are to be found in the Simplified. But the latter should satisfy the needs of most collectors.

The best collection of

modern Peru that I ever saw belonged to an Englishman, who had lived in Argentina for many years, and had come home to retire. I wish some of my readers could have seen that collection. If they had they would need no urging to go in for the stamps of this country. They would notice that many of the most attractive designs were the work of our own Waterlow & Sons, and they might also wonder why, if British printers can turn out such nice looking stamps for foreign governments, they could not design and print a few worth looking at for our own Post Office. But this perhaps is beside the point.

Anyhow, I have not got room here to go into details over the many issues which make up modern Peru. Nor is there any real need for me to do so, for they are all fully illustrated in the catalogues and, most

important of all, many of them are quite easily come by. That is one of the main reasons why I have suggested this Western country.

It is a very important point, this question of availability, for it is no

use telling the average collector to go in for stamps that are difficult and expensive to come by. Yet, though I am not going to detail the issues, I would draw the attention of collectors to these Waterlow printings. Pick up the stamps and then hie to the local library and get out a book or two on Peru. There you will get a graphic picture not only of the country, but also indirectly of the why and the wherefore of many of those attractive designs to which I have referred. If you do the job thoroughly on the lines I have suggested, you can get an awful lot out of our hobby.

There is, of course, a short cut to starting a collection on the lines I have mentioned, if you have say a couple of pounds to spend. Perhaps you have sold your old collection, and have that sum available. Your local dealer may have a little collection to sell, and if not, watch the auction catalogues and when you see a likely lot on offer, see about buying it. You may land a snip.

If, however, you want to start from scratch, then concentrate on the latest stamps, for they are most likely to be available.



F
R
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For other Stamp Advertisements see also pages 316 and xxii

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Mostly recent issues including the two Russian stamps showing the **Ice-breaker "Lenin"** and the **Diesel Locomotive**, and other Commem. and special issues. Normal value of packet 2/-, but offered for 6d. only to introduce our service to new collectors. Just send 6d. (two 3d. stamps) and ask to see an approval selection—(if approvals not required please send 2/-). Write to-day to:

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to applicants for 1/4d. approvals.

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Stamp Gossip

A CENTURY OF SAVINGS

It is some time since I mentioned any stamps of Chile, but there is a nice item, this month, and obviously a commemorative. What do you think it commemorates? Nothing less than the Centenary of the Chilean Civil Servants Savings Bank!



Apparently for a full hundred years civil servants in that friendly Western country have had their own savings bank.

ANOTHER SEASON OVER

Although another football season is over, I cannot resist asking the Editor to illustrate a grand little stamp that has been issued by that very prolific

Liberia, as a final gesture for one more season successfully completed.

When we think of football we think of mud and grey skies, but Liberians will have a quite different picture in their minds, one of sand and bare feet. But the game is the same, and some of those West African chaps can kick a ball, with their bare feet, a lot harder than some of us could with boots on. I know, for many years ago—alas, too many—I played in a match where our opponents were in bare feet. To start with, we were afraid of stepping on their toes; later on we were afraid they would step on ours.

OUR REGIONALS

I do not suppose that any British stamps have proved so popular as the "Regionals" that were issued last year. The demand arises from a genuine interest in the stamps themselves, and although there have been issues for some months they are still best sellers.

Once the Post Office had received instructions to go ahead and issue these stamps they went to great pains to have

interesting stamps prepared, and panels of V.I.P.s were recruited to select apt symbols for the various countries concerned. As it is these symbols that I am so often asked about, I think brief details of them may interest some Meccano readers.

First we have the three 3d.



stamps for Guernsey, Jersey and the Isle of Man. For the former the symbols represent a Guernsey Lily (Nerine Sarniensis) and the Crown of William the Conqueror.

On the Jersey stamp we get the Royal Mace of Jersey at the left and the Coat of Arms of the Island to the right—and don't overlook the interlarded tomatoes. Incidentally, the Arms date back to 1279, when Edward I granted Jersey a public seal.

The Isle of Man design has proved the most popular. It is the Legs of Man. When the stamp appeared some claimed that the "Legs" should be the other way round. Officially it was stated that an old and correct form had been copied and that they appear thus on the Manx Sword of State, a 13th Century Weapon, now borne before the Lieutenant Governor each year as he attends the open-air Tynwald Assembly. The frame of the stamp is a ring chain pattern taken from decorative carvings on Manx Runic Crosses.

Next month I will try to deal with the symbols on the other "Regionals".

AFRICAN INDEPENDENCE

On 6th March, Ghana issued a set of four stamps to commemorate the second anniversary of its independence and the lowest value of that set is being illustrated. Ghana stamps are a bit flamboyant, but

extensive American publicity is pushing them up in price and the issues to date will sell for a lot more than they cost when they first came out.

Ghana is bringing out new sets of stamps all the time, and

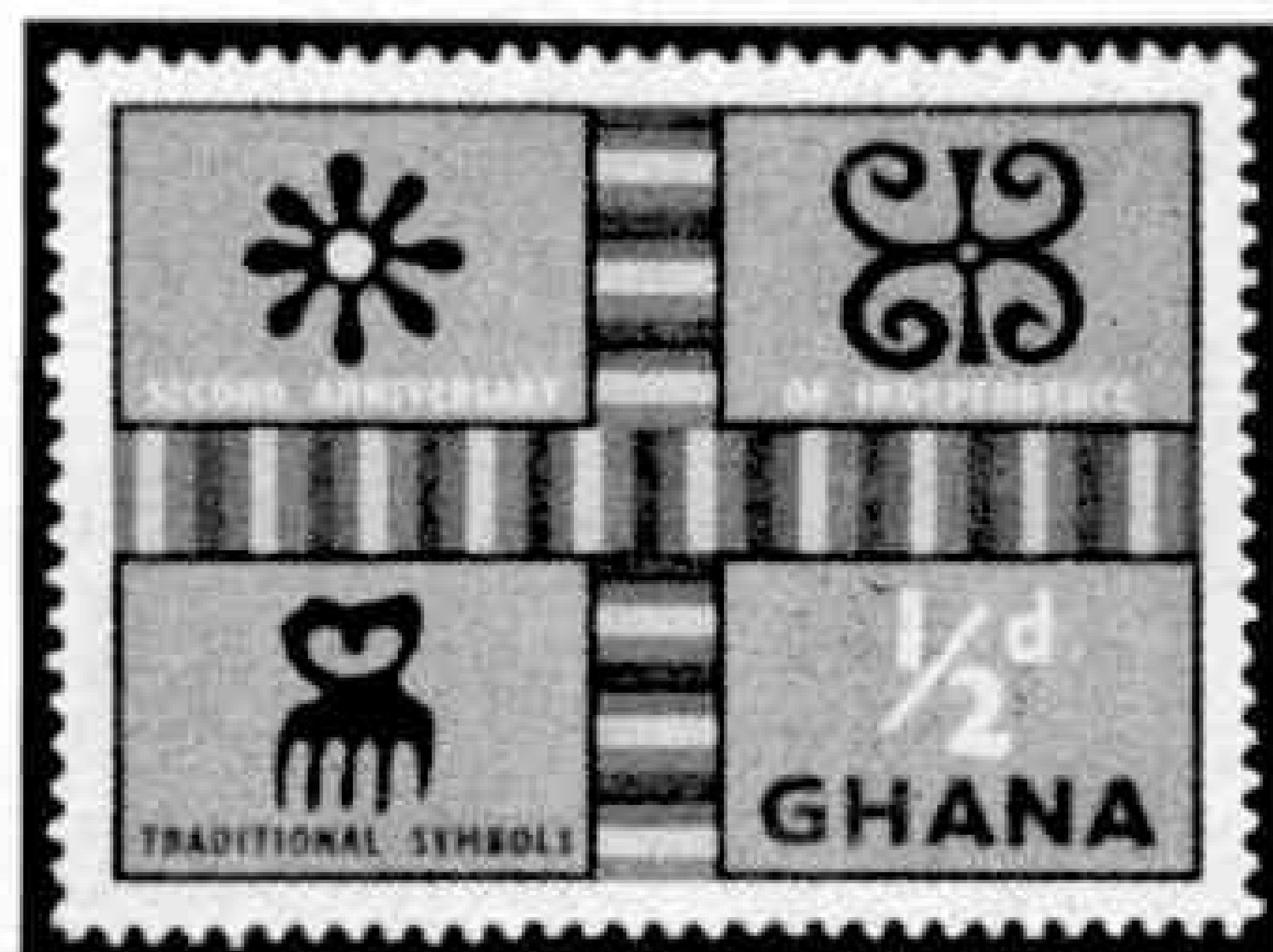
there has been some criticism over the project to issue a set of stamps, to commemorate the Queen's visit in October, that will include a 10/- value.

THE "SILVER DART"

The Canadian "Silver Dart" stamp that appeared on 23rd February commemorated the Golden Anniversary of the kite-like "Silver Dart", which made the first powered flight of a heavier-than-air machine in Canada, on 23rd February, 1909. The stamp illustrates not only the "Silver Dart" but Delta wing aircraft in silhouette. A nice used copy will sell for about 3d.

TIP OF THE MONTH

Kuwait, now a member of the U.P.U., has just brought out a new set of stamps, and two of the three locals, 5np and 10np, have been incorporated in the new definitive set. The 40np is being dropped when the stock is used up, as no doubt it will be by the time these lines appear in print. This 40np "local" shows the head of the Shaikh, and of course it will be catalogued in the Commonwealth Catalogue at least, for what it is, a pukka stamp. So look round for a copy, or make sure your set has one.



More Binns Road Delights



THE most recent Dinky Toys Collector's visit to Liverpool and the Works of Meccano Ltd. was Roger Willman, Hereford, who in this picture is seen with his mother and his younger sister. Roger had a terrific time watching not just Dinky Toys, but Hornby and Hornby-Dublo trains and Meccano also being made.

Besides being a Dinky Toys fan and the holder of Dinky Toys Collectors' Licence No. 277, Roger is also a Hornby-Dublo enthusiast who operates a unique layout on a board 9 ft. long and 2 ft. wide, with many yards of track, three locomotives and both

passenger and goods trains, and he has now started equipping his railway with Hornby-Dublo colour light signals. So he was especially delighted when he had the opportunity of playing with one of our special Hornby-Dublo train layouts fitted with practically everything made in Hornby-Dublo.

After enjoying a full day at Binns Road and at Speke, Roger and the other members of his family who accompanied him returned next day to their home in Hereford, with memories that will keep them interested and delighted for a long time to come.

Atlantic Anniversary—(Continued from page 275)

"Have a sandwich."

"We'd be better lower down where the air is warmer and we might pick up a steamer."

The next entry shows that their troubles were still not over after 15½ hours' flying:

"At 19.55 dropped to 1,000 ft. with starboard engine popping—possibly a broken or sticking valve." But Brown knew they were near their journey's end and wrote next:

"Let's try to spot a railway station first"—to read its name and find out where they were.

"Crossed land at 8.25 on 15th."

"Probably N. Ireland. Can you carry on and go farther S.? Follow the railway."—and finally:

"Landed 8.40 G.M.T."

The flight of 1,880 miles was over, and two new names took their place with those of the Wright brothers and Blériot in the history of aviation's greatest moments.

Space Notes—(Continued from page 279)

The 10th International Astronautical Congress

In 1950 a handful of enthusiasts of various nations, including myself, met in Paris and paved the way for the formation in the following year, in London, of the International Astronautical Federation. This has since held an annual Congress in a European capital, and this year this event will be held in London, the host being, of course, The British Interplanetary Society, which is the largest and oldest interplanetary society in the world.

The 1959 Congress will be held from 31st August to 5th September at Church House in London, and further information can be obtained from the British Interplanetary Society, 12 Bessborough Gardens, London S.W.1.

Master of a Coastal Tanker—(Continued from page 291)

his ship under all conditions; he must be a businessman with the knowledge that if he misses a tide and is delayed in delivering a cargo, he may lose his ship's owners a considerable sum of money; at times he may even have to act as doctor and perform some minor operation at sea. Contrary to popular belief, he does not have the power to marry people, but that is one of the few duties not expected of him.

There is a knock at the door. His Chief Officer comes in and reports that all the crew are on board, and that the ship is ready for sea. The Master changes back into his uniform, and makes his way up to the bridge.

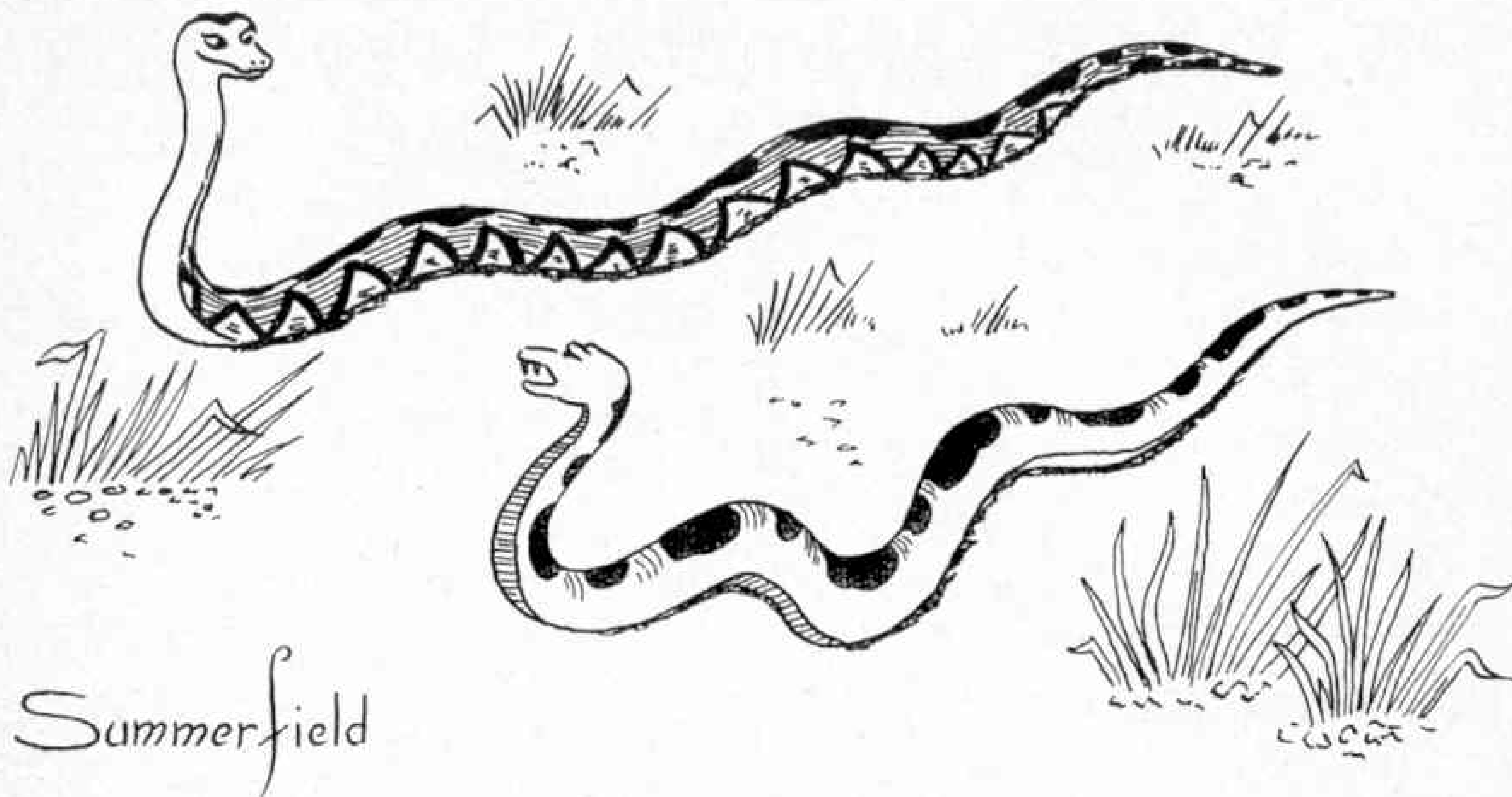
Having instructed the engine room to stand-by, he picks up a megaphone and goes out on to the wing of the bridge.

"Let go springs. Let go head rope," shouts the Master.

Now the ship is held to the quay by one line only. He waits. Slowly the wind and tide swing the bows into midstream.

"Let go aft," he orders. And then to the helmsman, "Port 10°."

He rings down "Slow Ahead" to the engine room. The tanker moves out to sea, and in ten hours' time she will have returned to the Thames for another cargo.



"Let's stop for a rest—my ribs are killing me!"

Fireside Fun

"Where are we going to eat?"
 "Let's eat up the street."
 "Naw, I hate asphalt."

Busy Man: "I really cannot see you."
 Caller: "Good, I'm selling spectacles."

A film magnate, notorious for long after-dinner speeches, was starting another of his marathons. At the far end of the hall one guest leaned over to his friend. "What follows this speaker?" he queried.
 "Wednesday," was the reply.

"That pink-and-green tie in the window—would you take it out for me?"
 "Certainly, sir."
 "Thank you so much; the vile thing irritates me every time I go by."

Shop Assistant: "What can I do for you, little man?"
 "Please, sir, a halfpenny-worth of mixed fruit drops, a halfpenny change, and I'll bring the penny in on Saturday."

The tourist leaned on the fence, watching the old farmer plough.
 "I don't like to tell you how to run your business," said the tourist, "but you could save yourself a lot of work by yelling 'gee' and 'haw' at the mule instead of pulling on the reins."

The old farmer stopped, mopped his brow, and answered: "I reckon maybe you're right, but, five years ago, this mule kicked me and I haven't spoken to him since."

At Lady Newrich's tea party the conversation turned to motor cars and motoring.

"And what make is your nephew's new car, Lady Newrich?" asked one of the guests.

"If my memory serves me right," replied the hostess, "I rather think that I heard him say it was a 'Smasher'."

"Ladies and gentlemen," shouted a street performer, "in a few moments I will astonish you by eating coal, stones and nails. I will also swallow a sword; then I will come round with a hat, trusting to get enough for a crust of bread."

"What!" came a voice from the crowd. "Still hungry?"

Boss: "We're going to give you a raise, Jones. We want your last week here to be a happy one!"

BRAIN TEASERS

IS THIS CORRECT?

Moses was the daughter of Pharaoh's son.

THREE MINUTE CROSSWORD

CLUES

Down

- 1 Vehicle
- 2 Provide
- 3 Drive off

Across

- 1 Animal
- 4 Not now
- 5 Insect



ANSWERS TO LAST MONTH'S PUZZLES

Can You Solve This?

The solution to the jumbled letters puzzle is "MAN" in MOON.

A Juggle with Words

The six-letter word is REMOTE and it can be re-arranged to form the word METEOR.

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Robert E. Presswood,
Director of Education.

City Hall, Cardiff.

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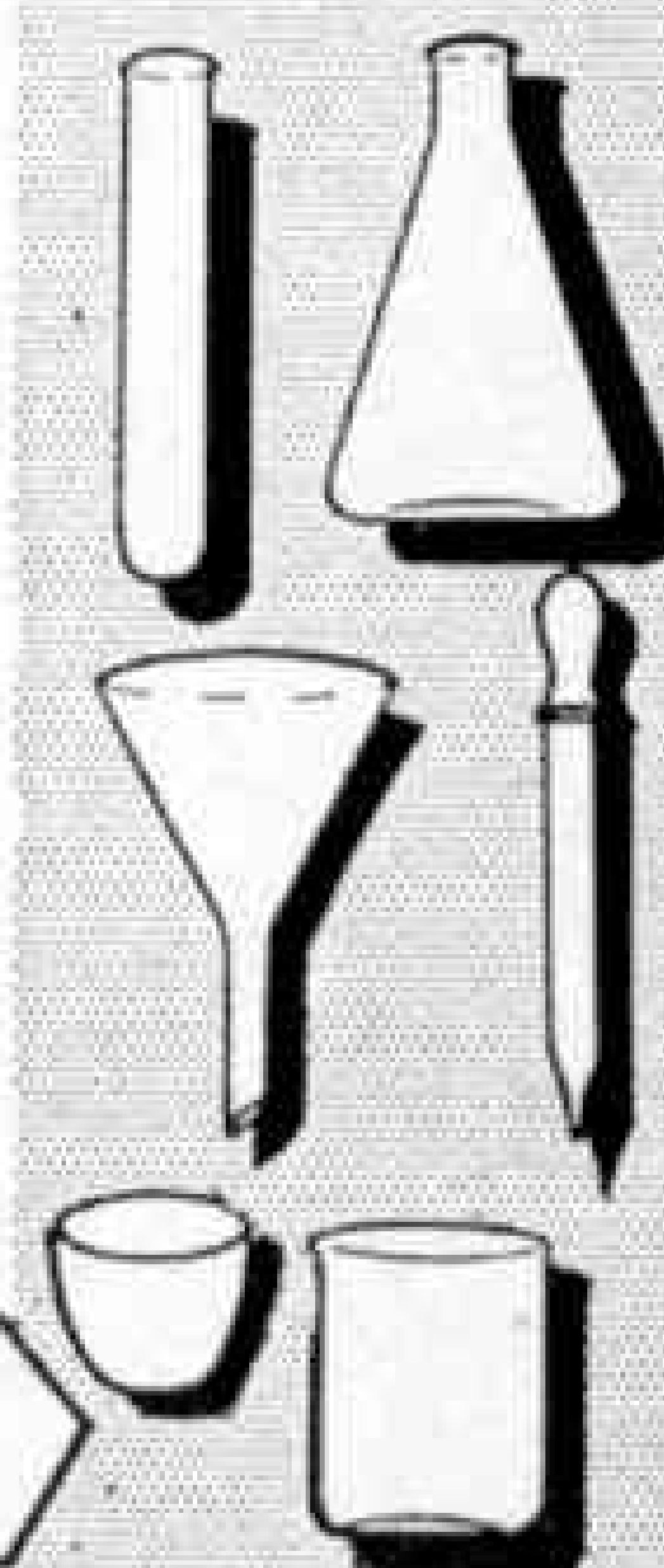
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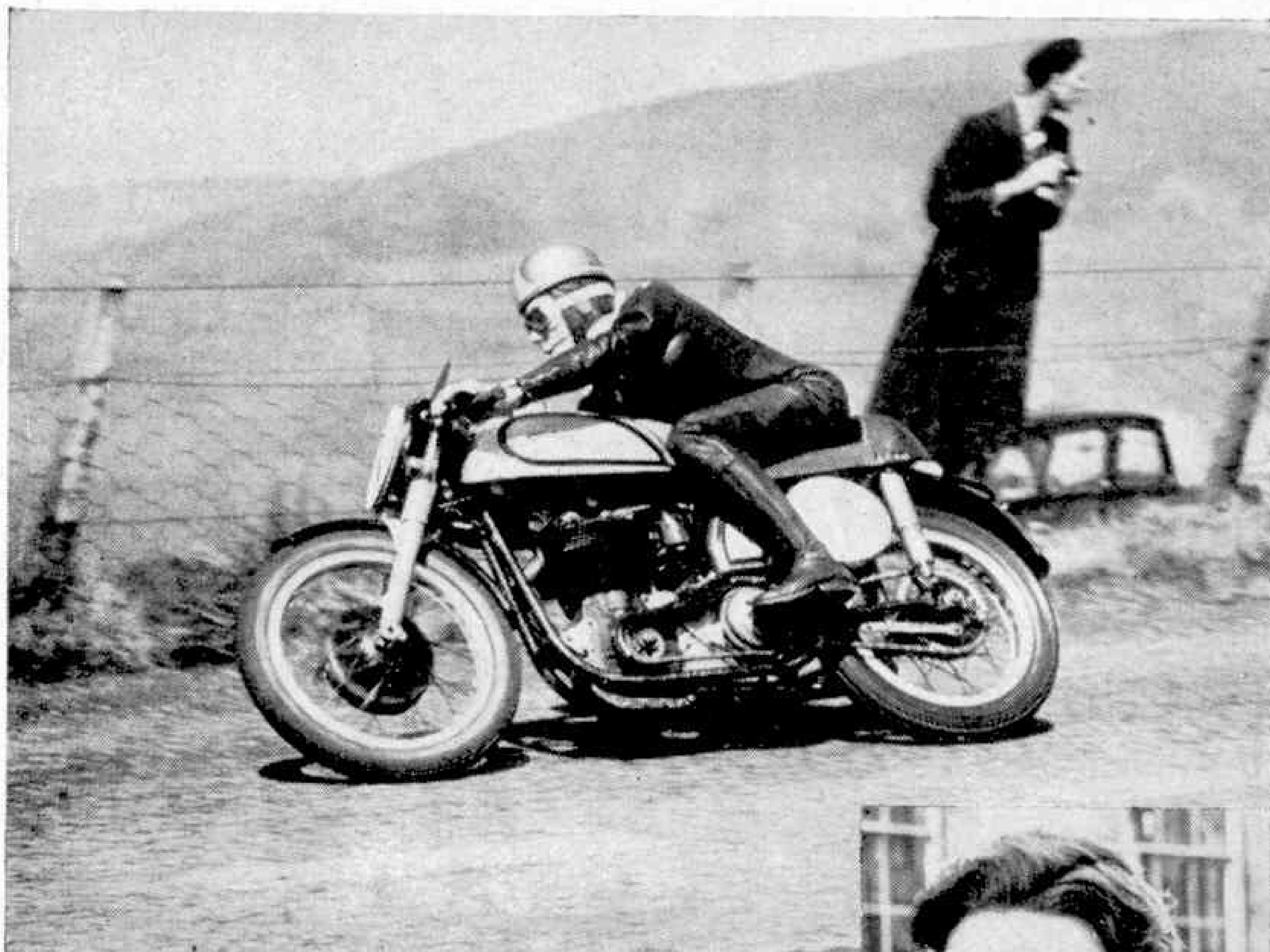
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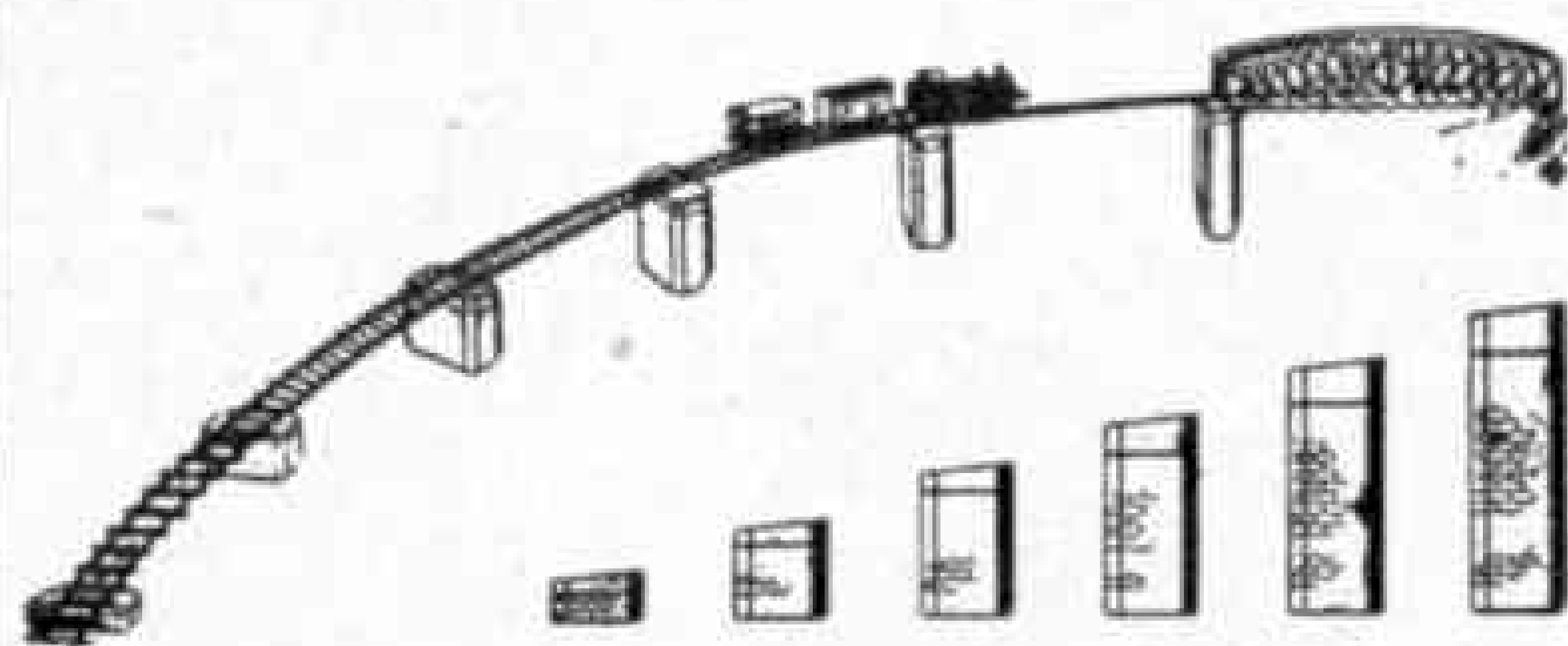
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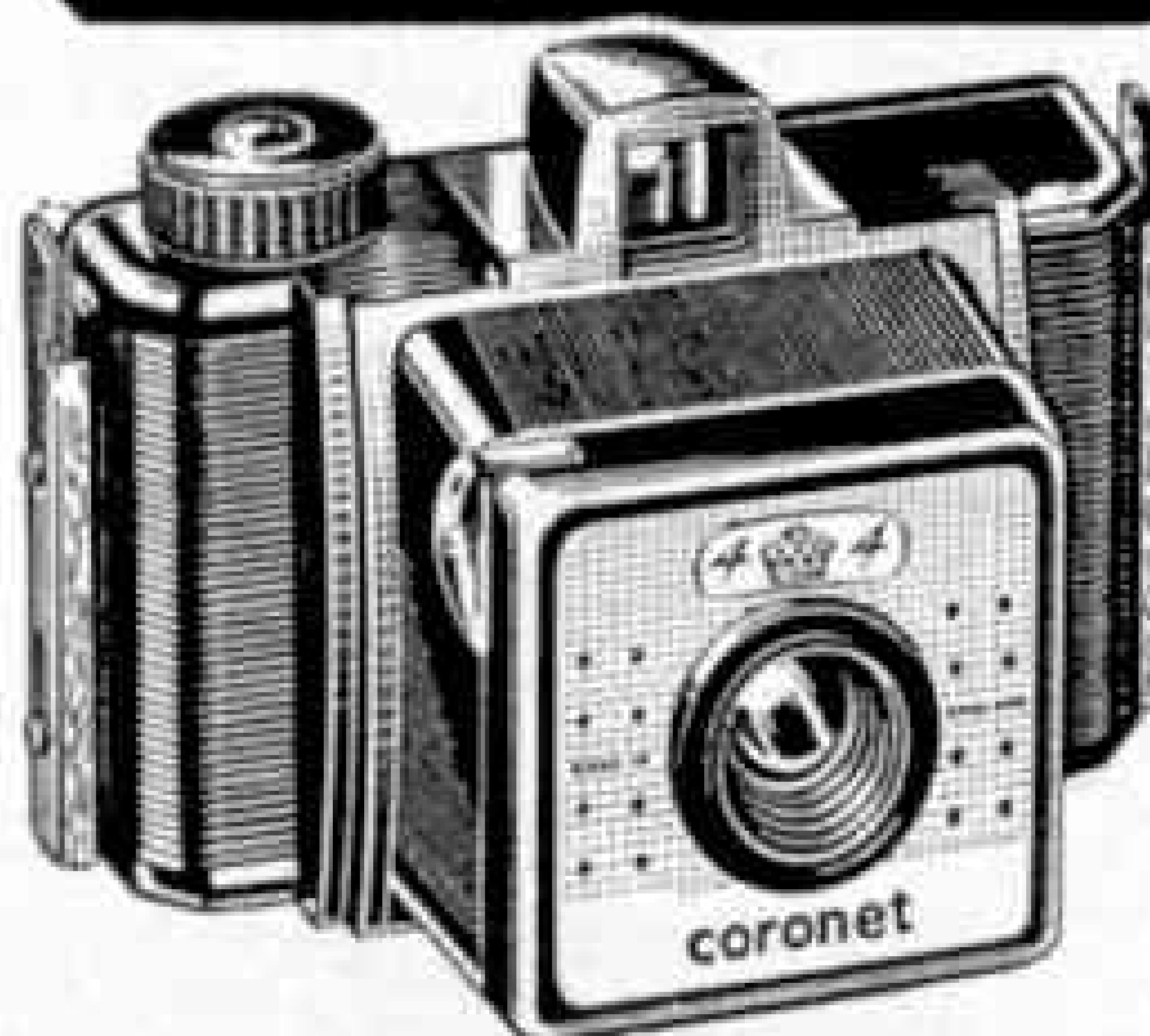
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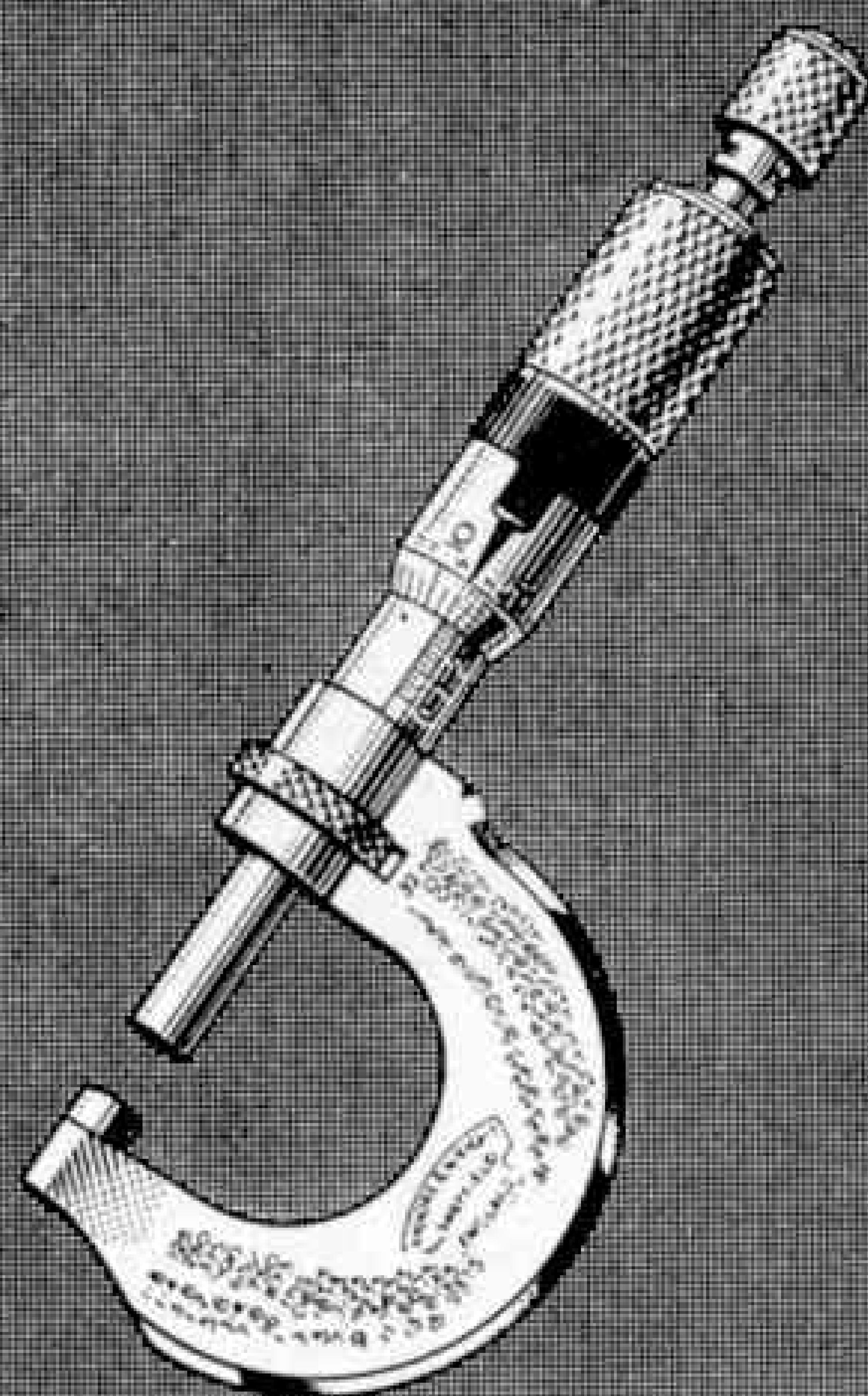
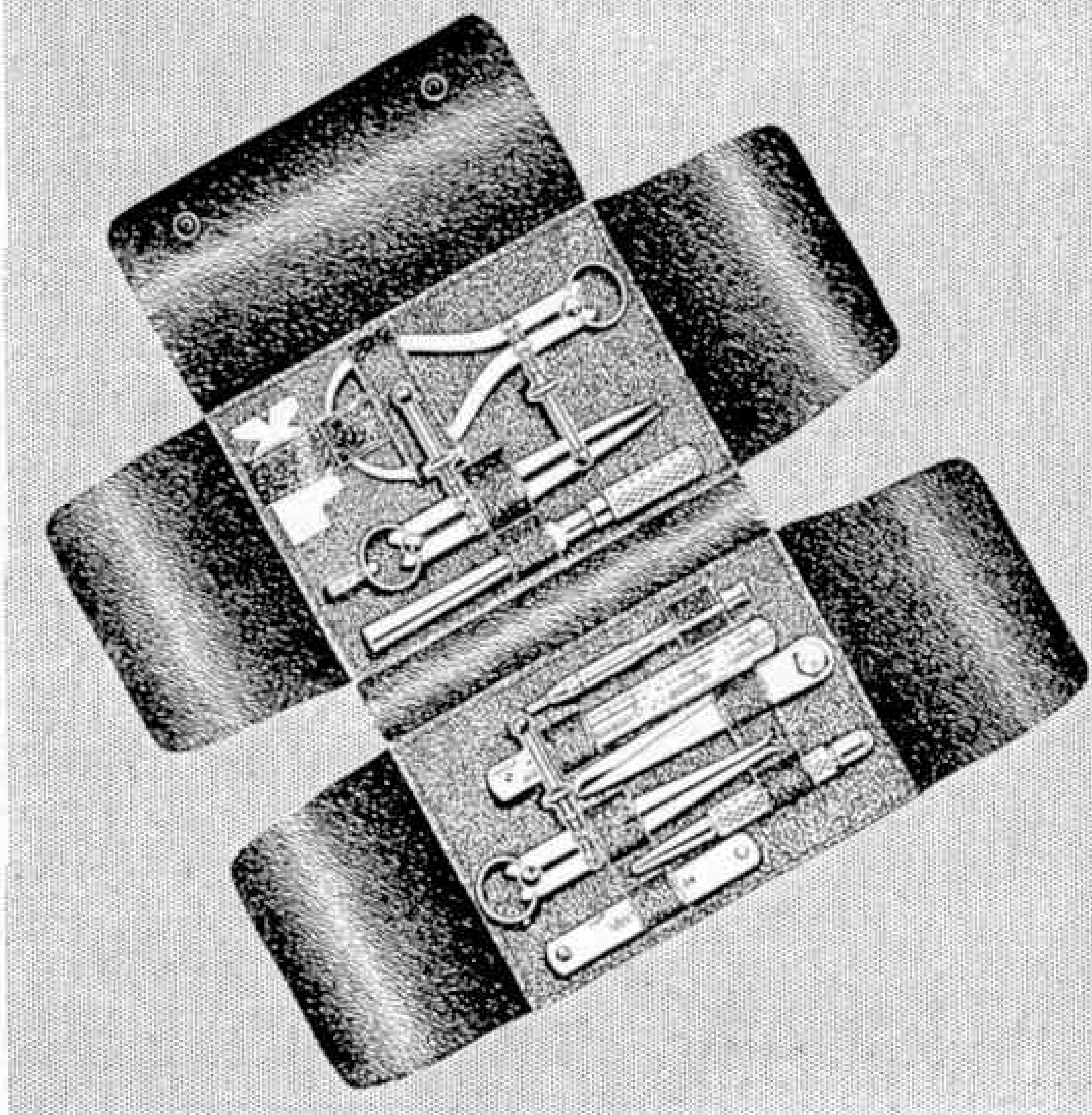
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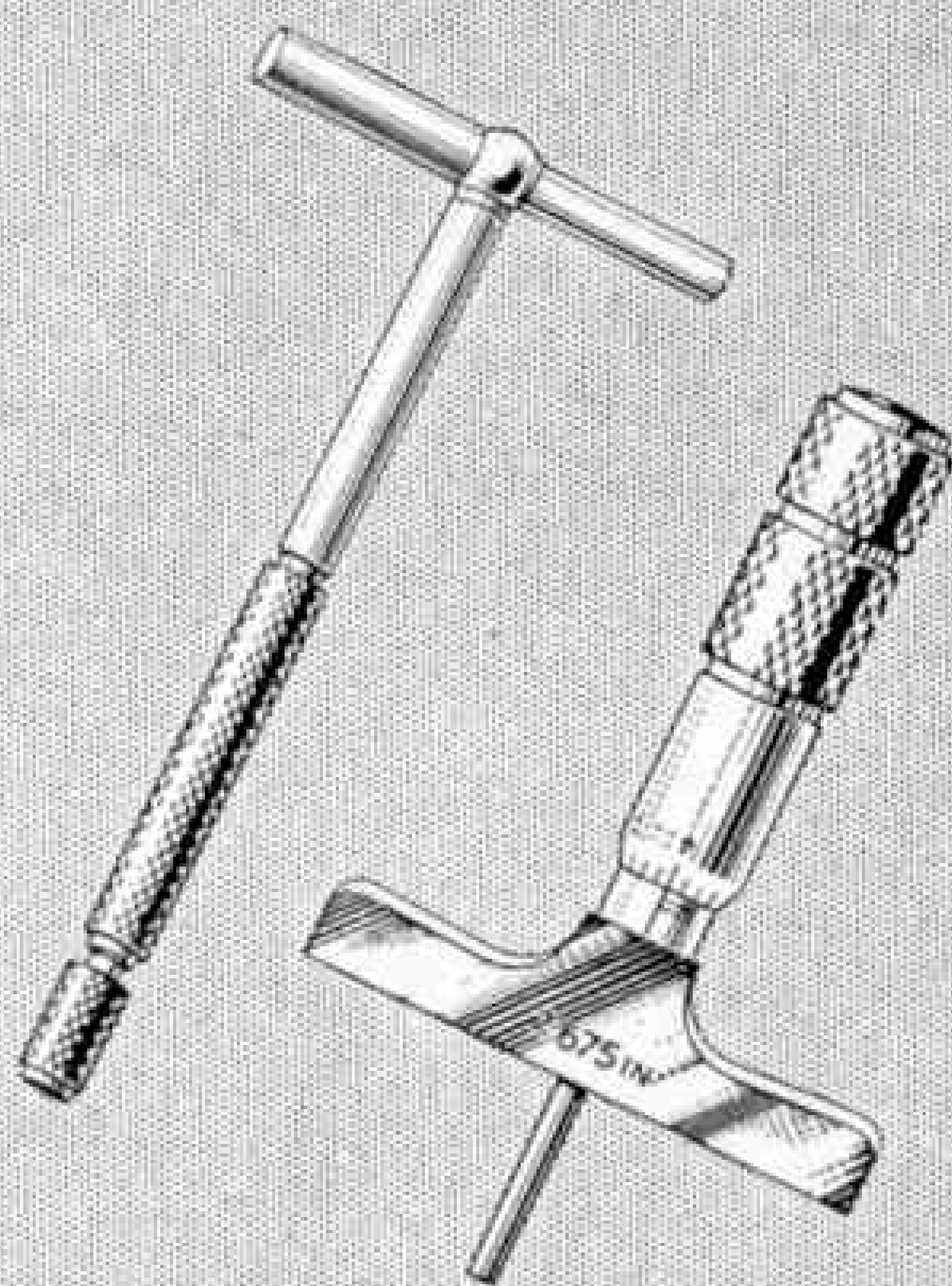


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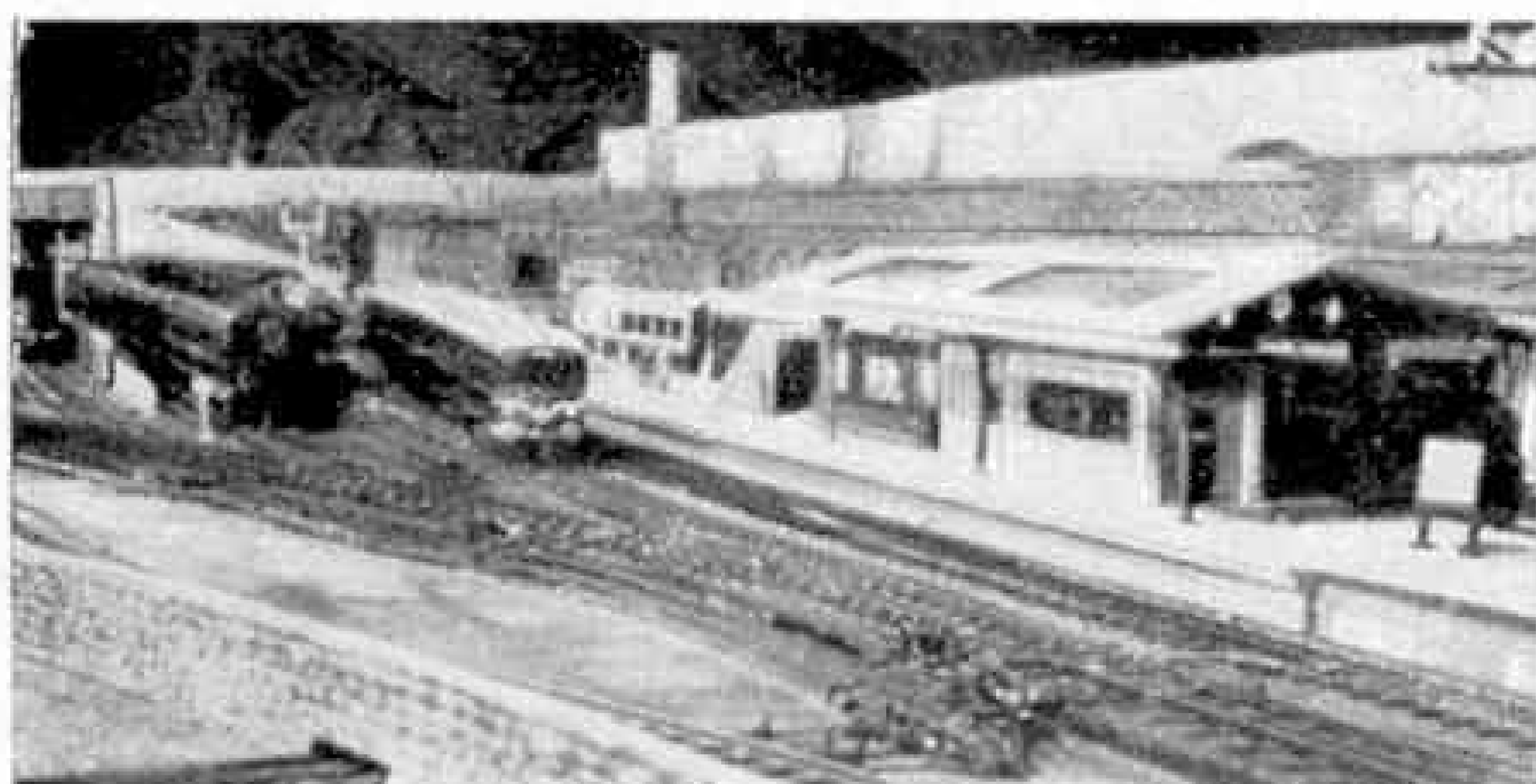
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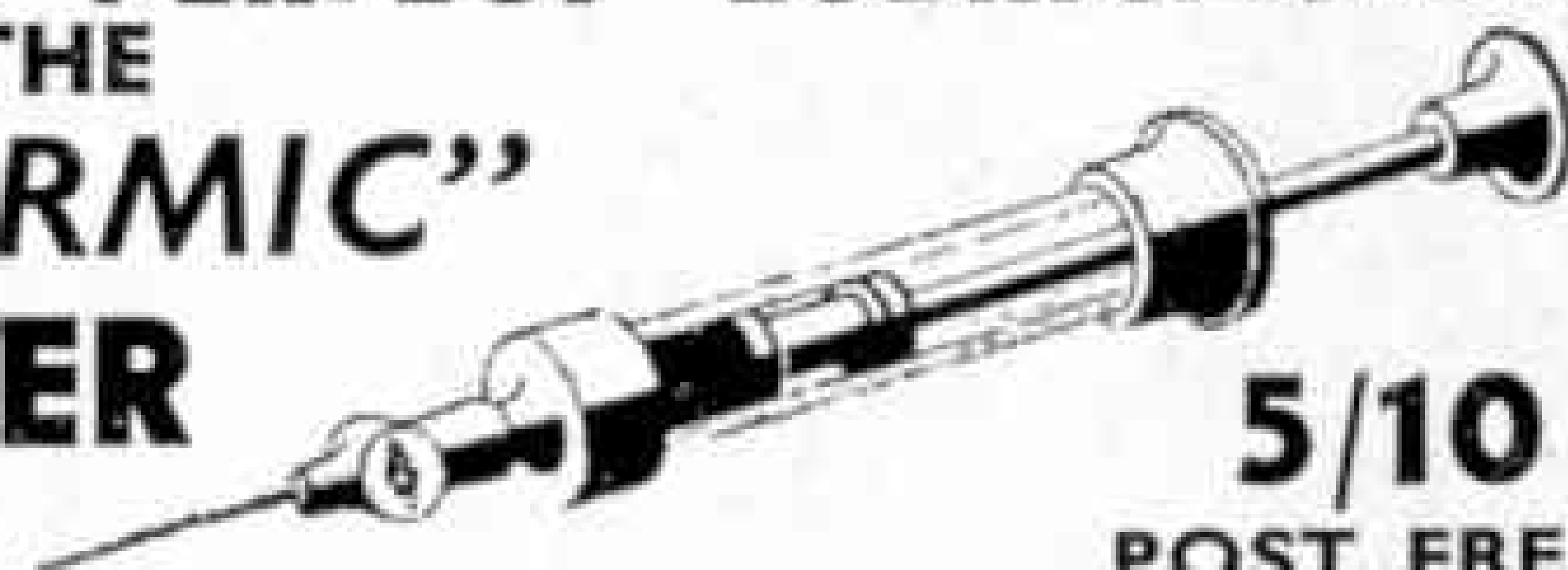
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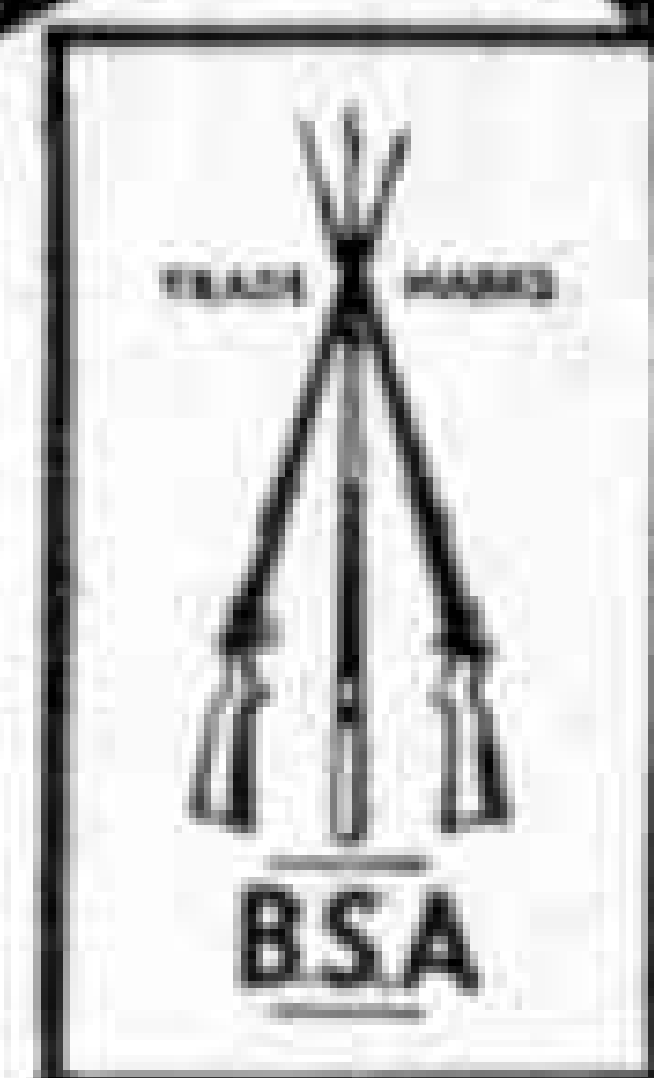


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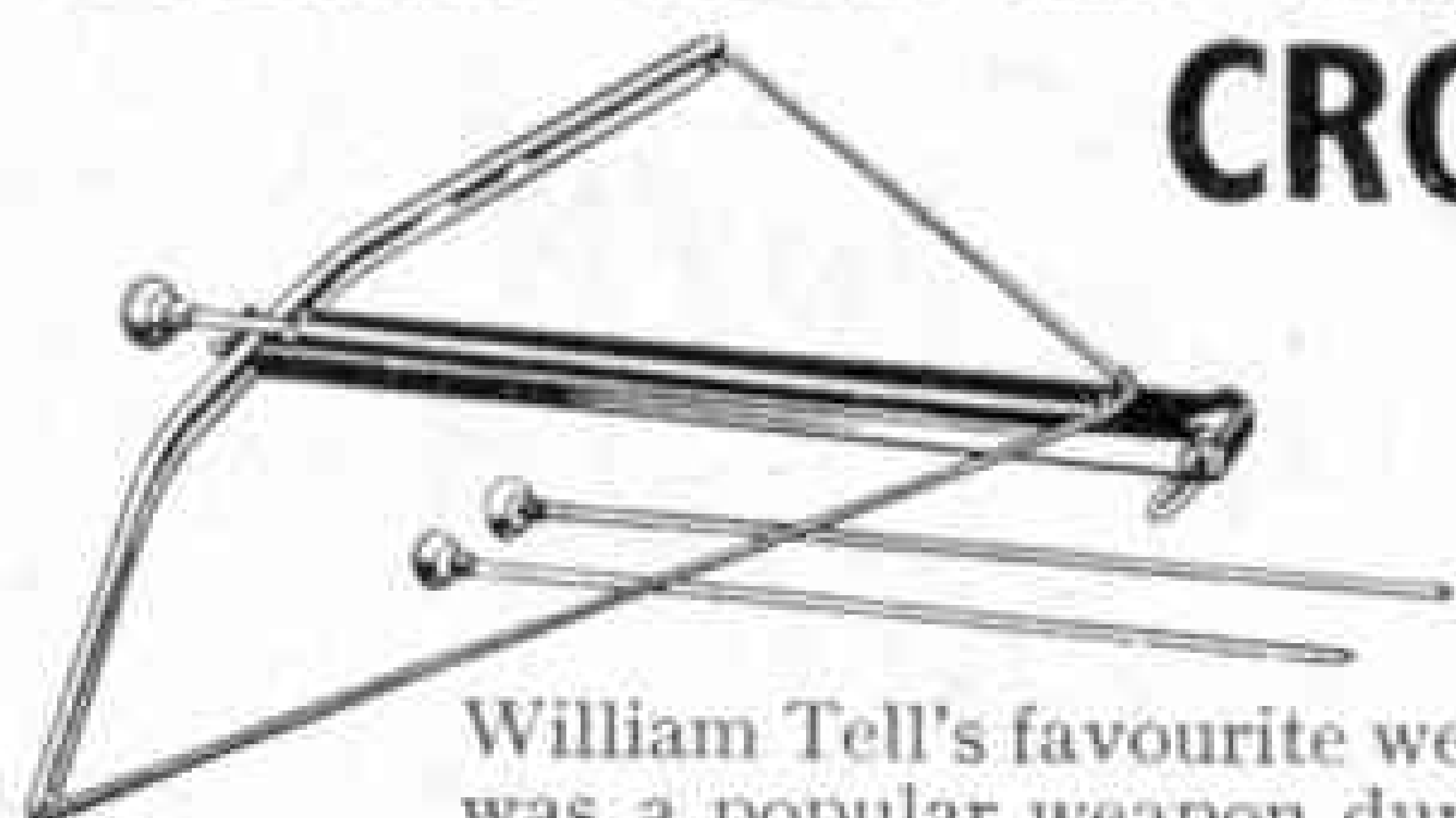


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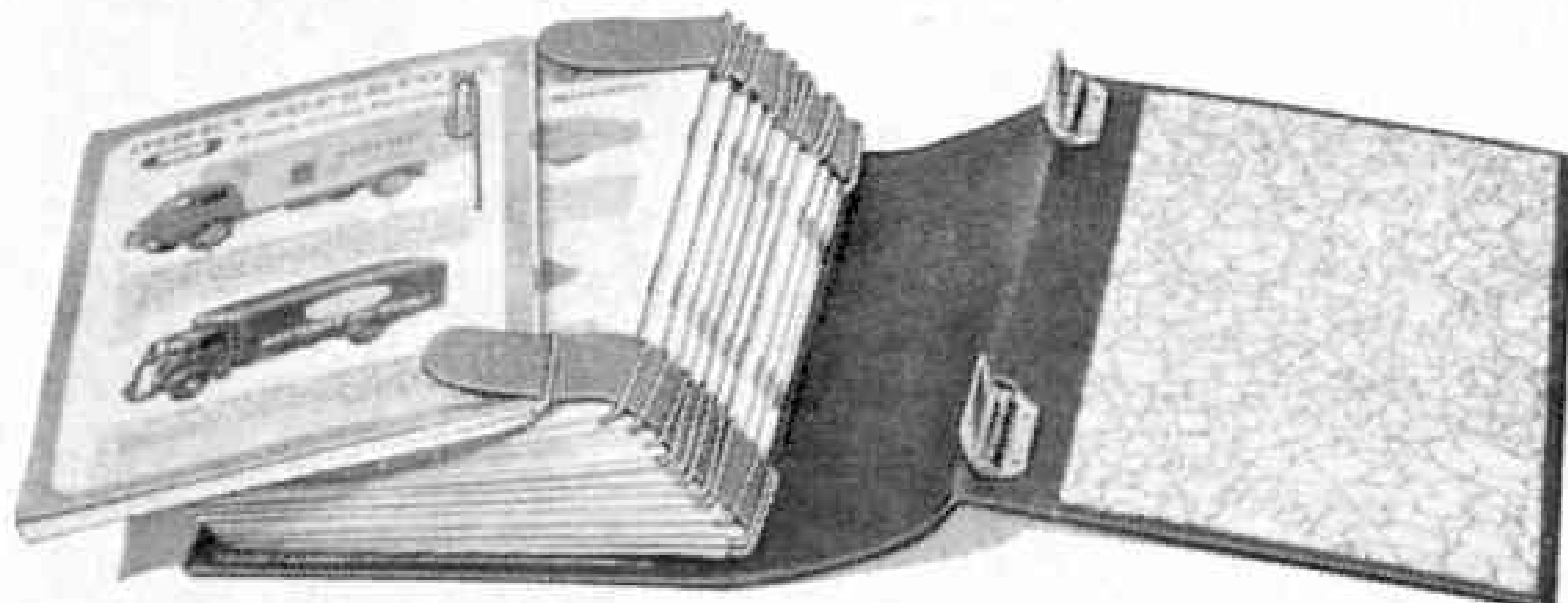
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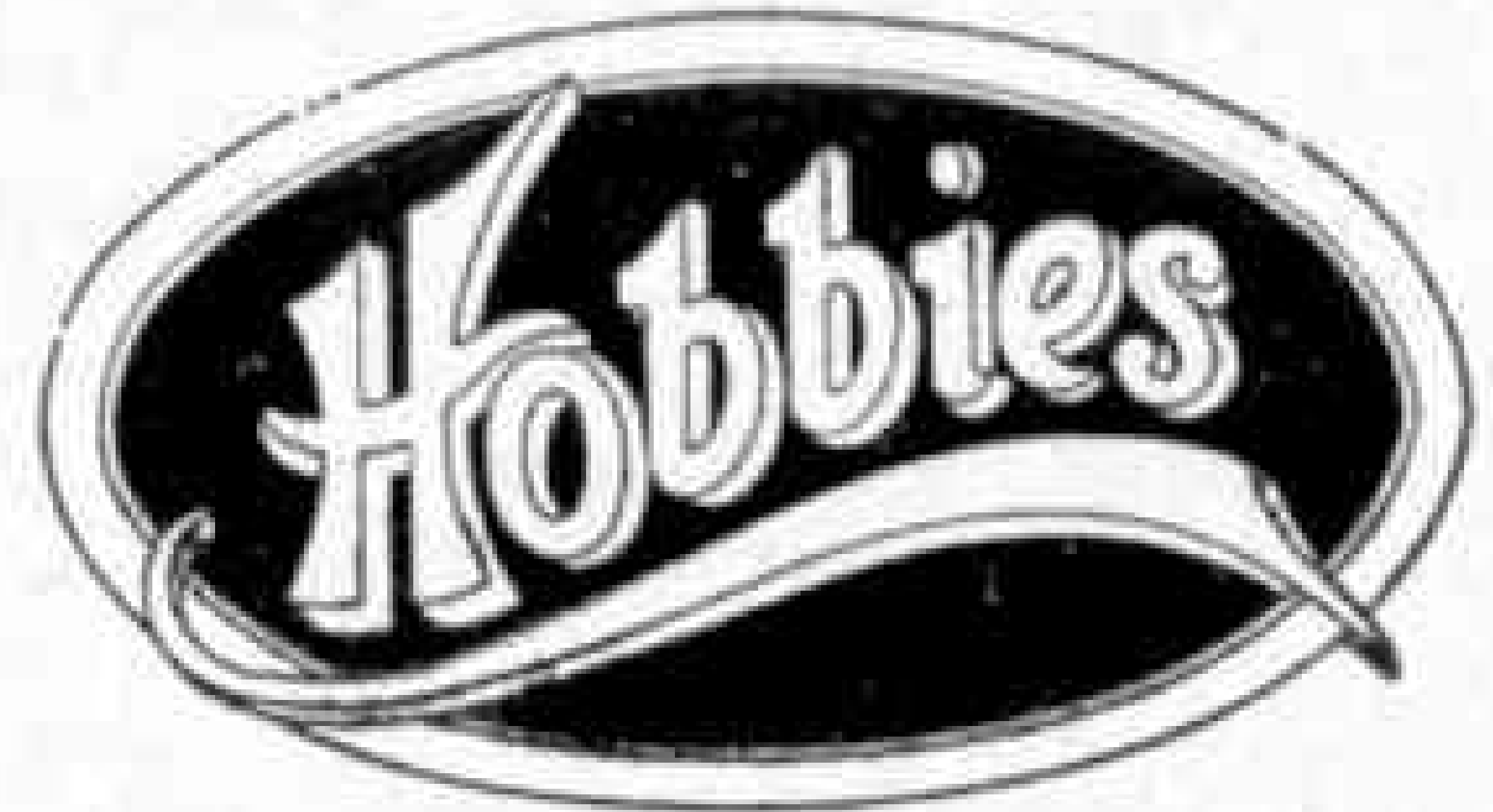
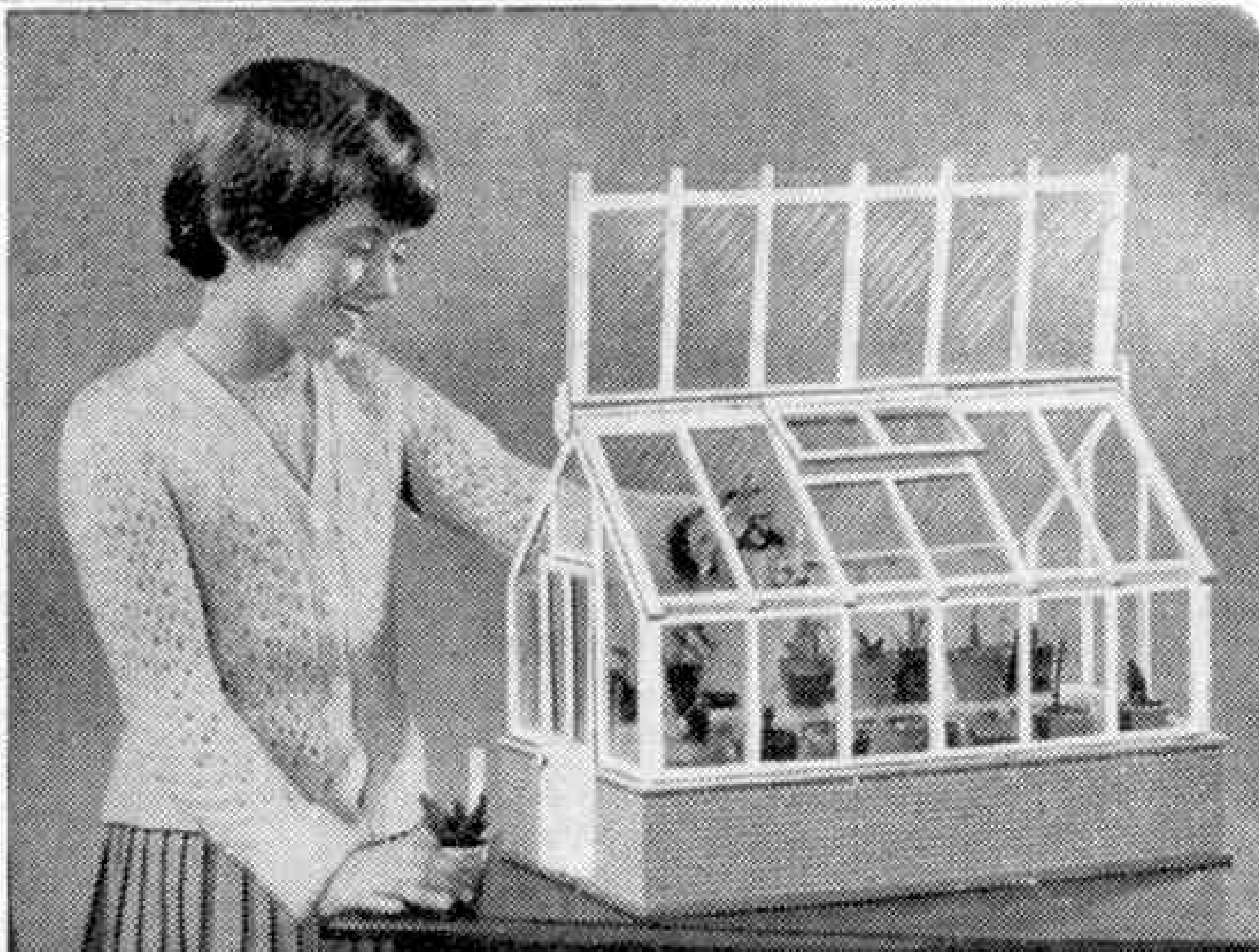
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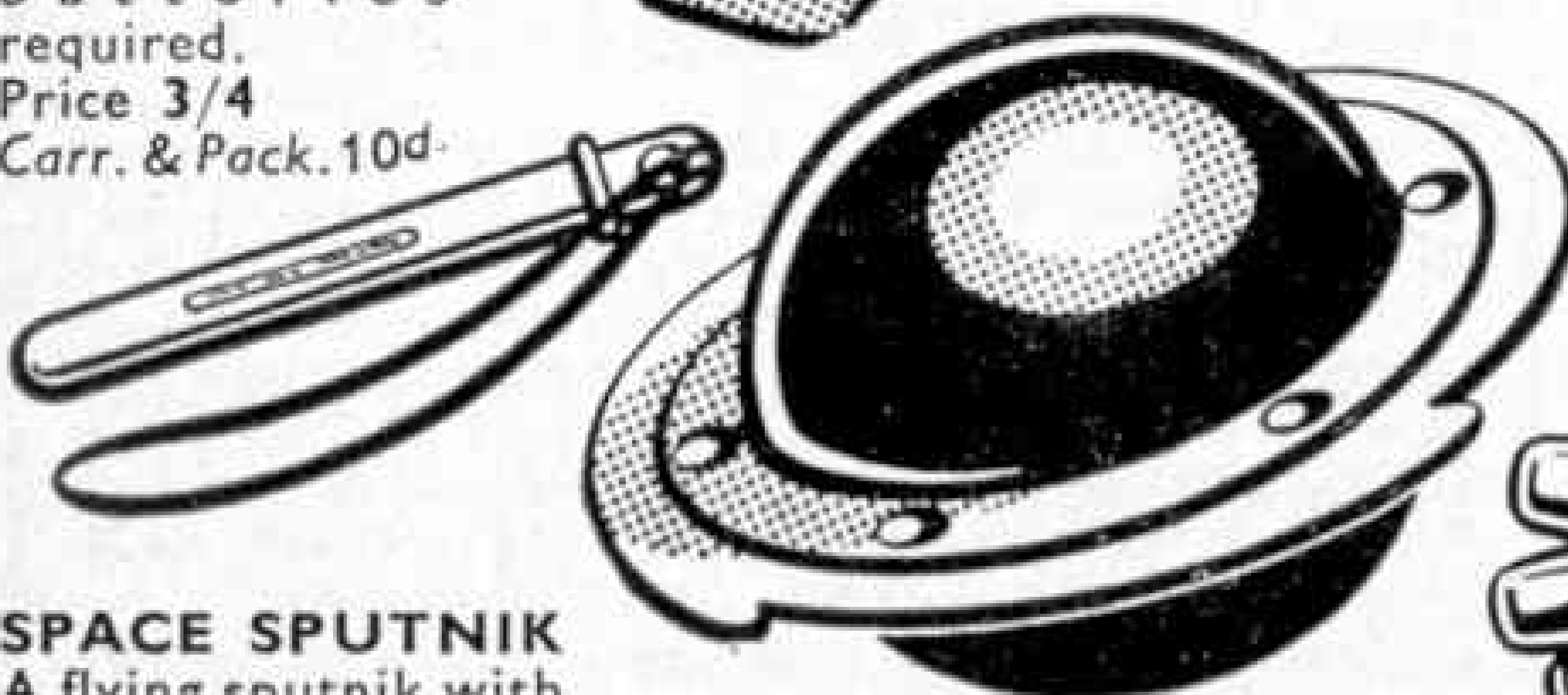
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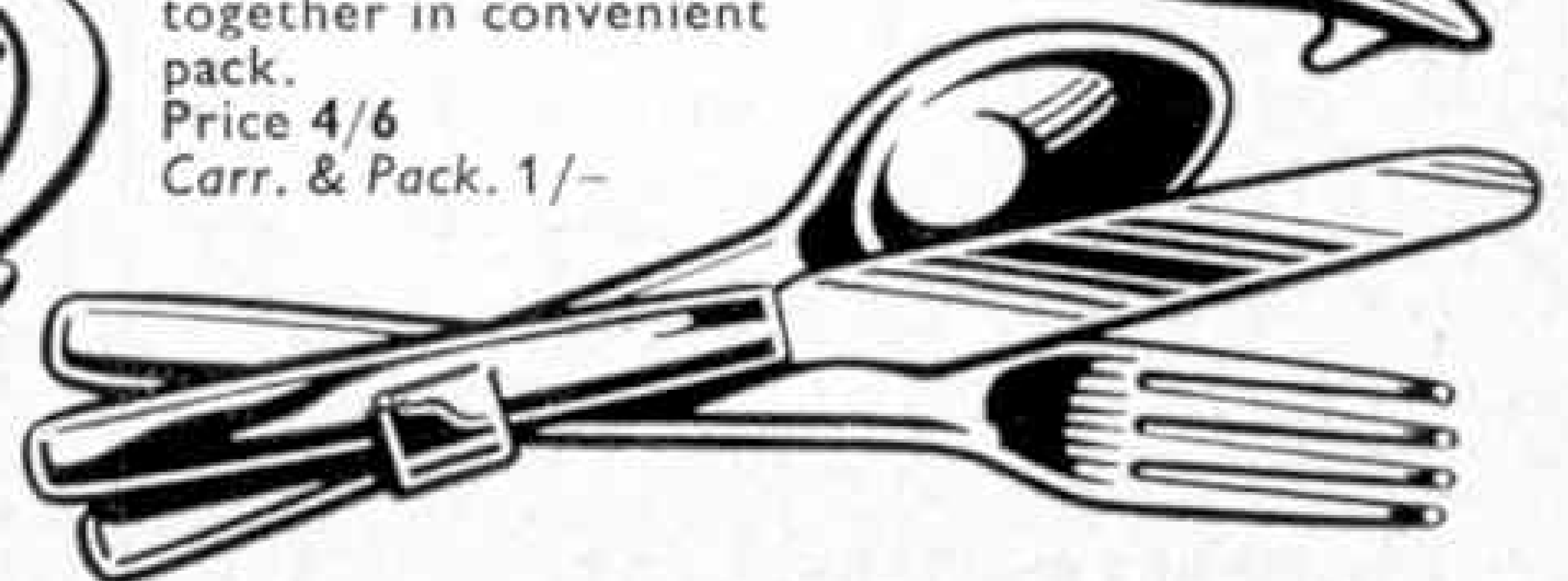
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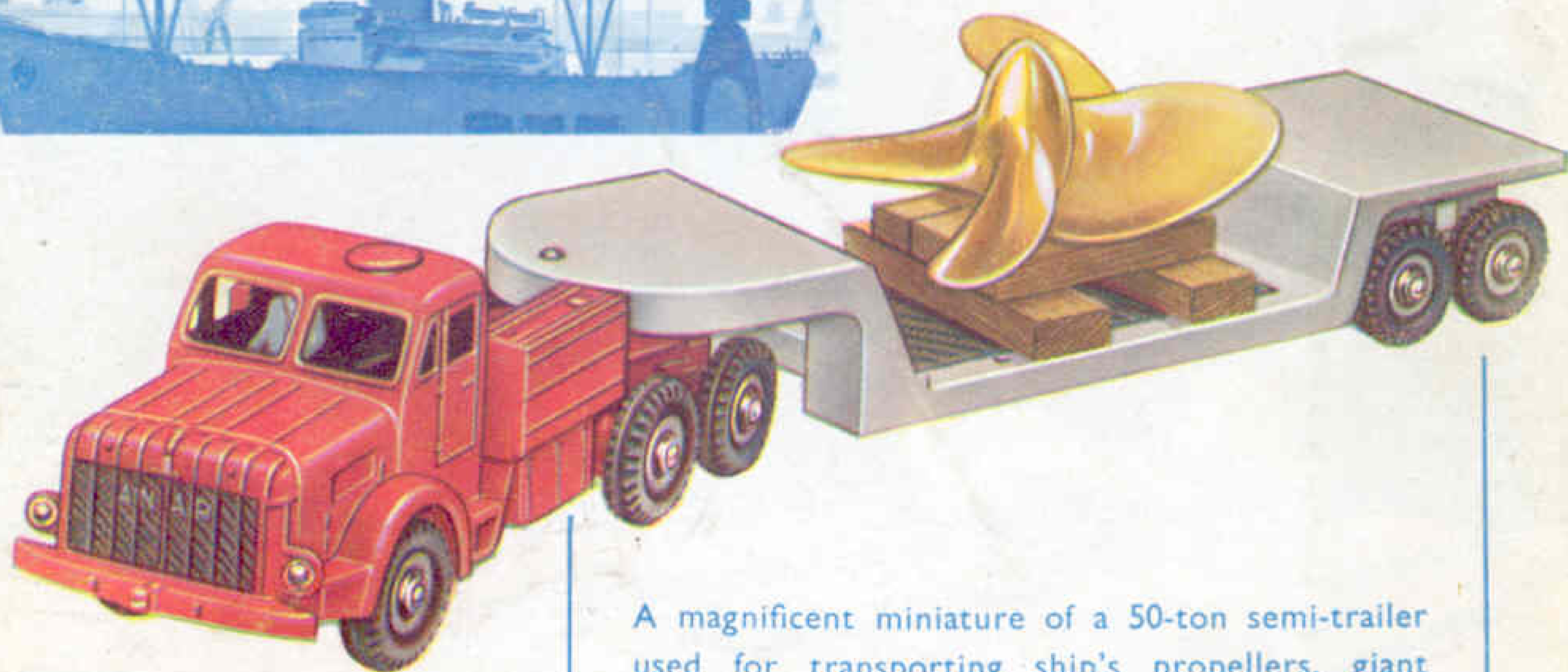


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